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A-PL-7013926-0-0	SCP AND CONSOLE ASSY (PL)
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B-DD-RX01-0	RX01 FLOPPY DISK UNIT ASSY (FULL SET)
B-DD-11/03-0	UNIT ASSY 11/03 (FULL SET)

UNIT VARIATIONS COVERED BY THIS PRINT SET

KC780-AA
KC780-AB
KC780-AC

KC780
Field Maintenance
Print Set

Digital Equipment
Corporation

PRINT SET ORDER NO.
MP00534

digital

TITLE:
KC780 CONSOLE ASSY

SIZE	CODE	NUMBER	REV.
B	TC	KC780-0-1	
DIST.			

USED ON OPTION/MODEL

11780

DRN.

P. BOUDREAU

CHK'D

D. HEALY

PROJ. ENG.

FIELD SERV.

DATE

SEP 77

DATE

NOV 77

DATE

11/5/77

DATE

E 100
77

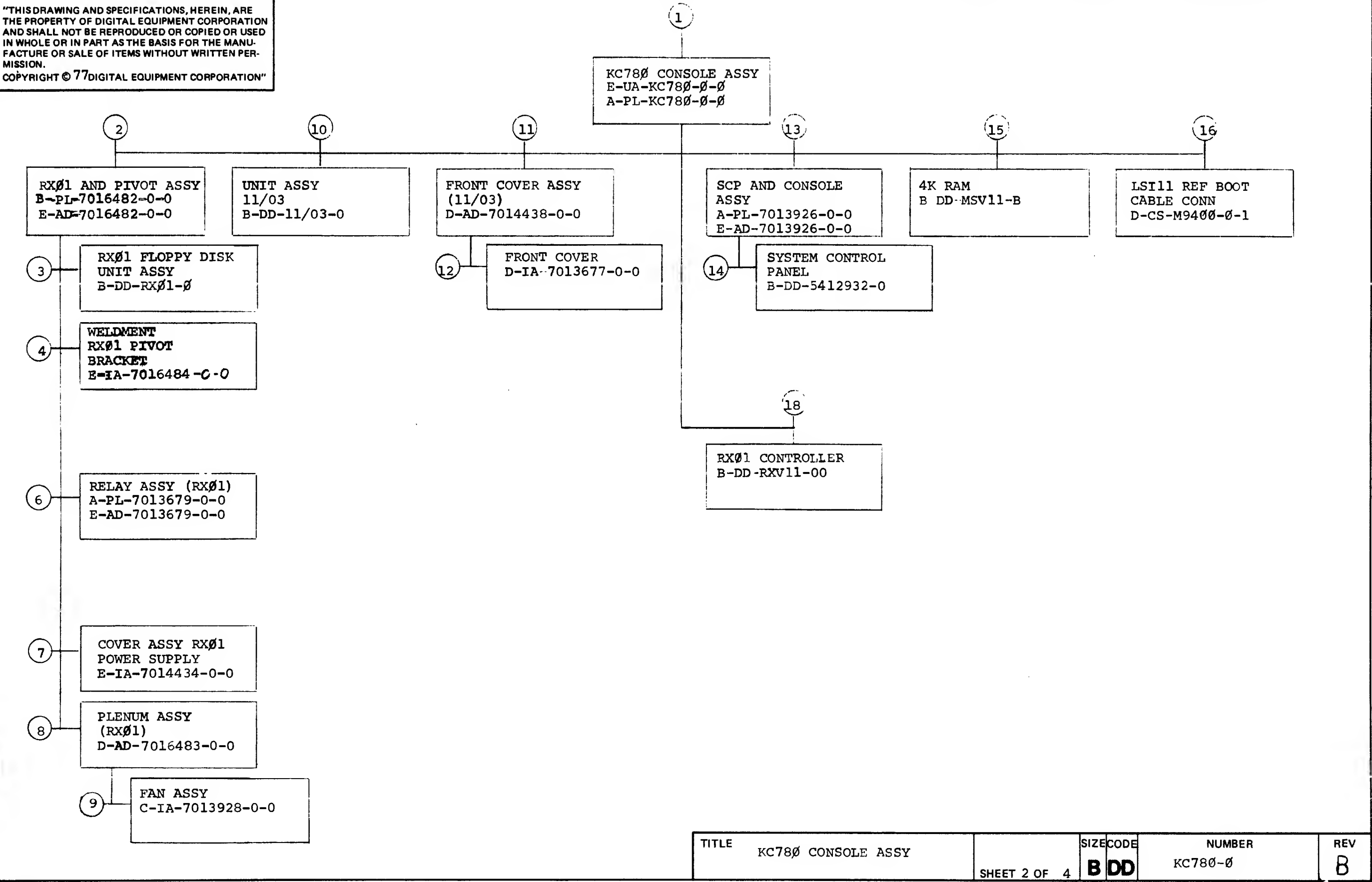
SHEET 1 OF 1

EN 01124 16-NE/5 (327)

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REVISIONS			USED ON OPTION/MODEL	DRN.	DATE	TITLE										
CHK	CHANGE NO.	REV.		11780	P. BOUDREAU	SEP 77	KC780 CONSOLE ASSY									
	KC780-1	A			CHK'D.	DATE										
					D. HEALY	NOV 77										
					PROJ. ENG.	DATE										
						11/17/77	SIZE		CODE	NUMBER						REV
							B	DD	KC780-0						B	
							DIST.									
			SHEET 1 OF 4	PROD.	DATE											
				Grant Lee	11/17/77											

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FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
1	MP00534	KC780 CONSOLE ASSY (MP)	-
	B-TC-KC780-0-1	KC780 CONSOLE ASSY (TC)	-
	E-UA-KC780-0-0	KC780 CONSOLE ASSY	E/M
	A-PL-KC780-0-0	KC780 CONSOLE ASSY (PL)	E/M
	C-IA-7014242-0-0	POWER CONTROL CABLE	E/M
	C-IA-7014243-0-0	FLOPPY RELAY SCP POWER CABLE	E/M
	B-MD-7414928-0-0	PIN, PIVOT	M
	D-UA-BC05L-0-0	CABLE, JUMPER	E/M
2	E-AD-7016482-0-0	RX01 AND PIVOT ASSY	M
	B-PL-7016482-0-0	RX01 AND PIVOT ASSY (PL)	M
	D-MD-7417863-0-0	COVER, RELAY (RX01)	M
	B-MD-7418129-0-0	ARM, LOCKING (RX01)	M
	C-MD-7418150-0-0	HANDLE (RX01)	M
3	B-DD-RX01-0	RX01 FLOPPY DISK UNIT ASSY	E/M
4	E-IA-7016484-0-0	WELDMENT RX01 PIVOT BRACKET	M
	B-MD-7417959-0-0	SLEEVE	M
	D-IA-7422403-0-0	BRACKET, RX01 SUPPORT	M
	D-IA-7422404-0-0	BRACKET, RX01 PIVOT ENCLOSURE	M
6	E-AD-7013679-0-0	RELAY ASSY (RX01)	E/M
	A-PL-7013679-0-0	RELAY ASSY (RX01) (PL)	E/M

TYPE: E ELECTRICAL
M MECHANICAL
E/M ELECTRO/MECHANICAL

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
	D-IA-7417858-0-0	BACK PLATE	M
	B-IA-7014449-0-0	CABLE, RELAY CONTROL	E/M
7	E-IA-7014434-0-0	COVER ASSY RX01 POWER SUPPLY	M
	E-MD-7418113-0-0	COVER, RX01 POWER SUPPLY	M
	C-MD-7419283-0-0	SCREEN, POWER SUPPLY COVER	M
8	D AD-7016483-0-0	PLENUM ASSY (RX01)	M
	D IA-7422398-0-0	PLENUM (RX01)	M
	B-MD-7422399-0-0	TRAY PLENUM FILTER	M
	D-IA-7422400-0-0	BRACKET, FAN AND PLENUM MTG.	M
9	C-IA-7013928-0-0	FAN ASSY	F/M
	C-IA-7014951-0-0	POWER CORD, FAN	E/M
10	B-DD-11/03-0	UNIT ASSY 11/03	E/M
11	D-AD-7014438-0-0	FRONT COVER ASSY (11/03)	M
12	D-IA-7013677-0-0	FRONT COVER	M
	D-MD-7418959-0-0	COVER, FRONT	M
	C-MD-7418960-0-0	RETAINER, FILTER	M
13	E-AD-7013926-0-0	SCP AND CONSOLE ASSY	M
	A-PL-7013926-0-0	SCP AND CONSOLE ASSY (PL)	M
	D-MD-7418102-0-0	COVER PROTECTIVE (COMPONENT BOARD)	M

TITLE KC780 CONSOLE ASSY

SHEET 3 OF 4

SIZE CODE B DD

NUMBER KC780-0

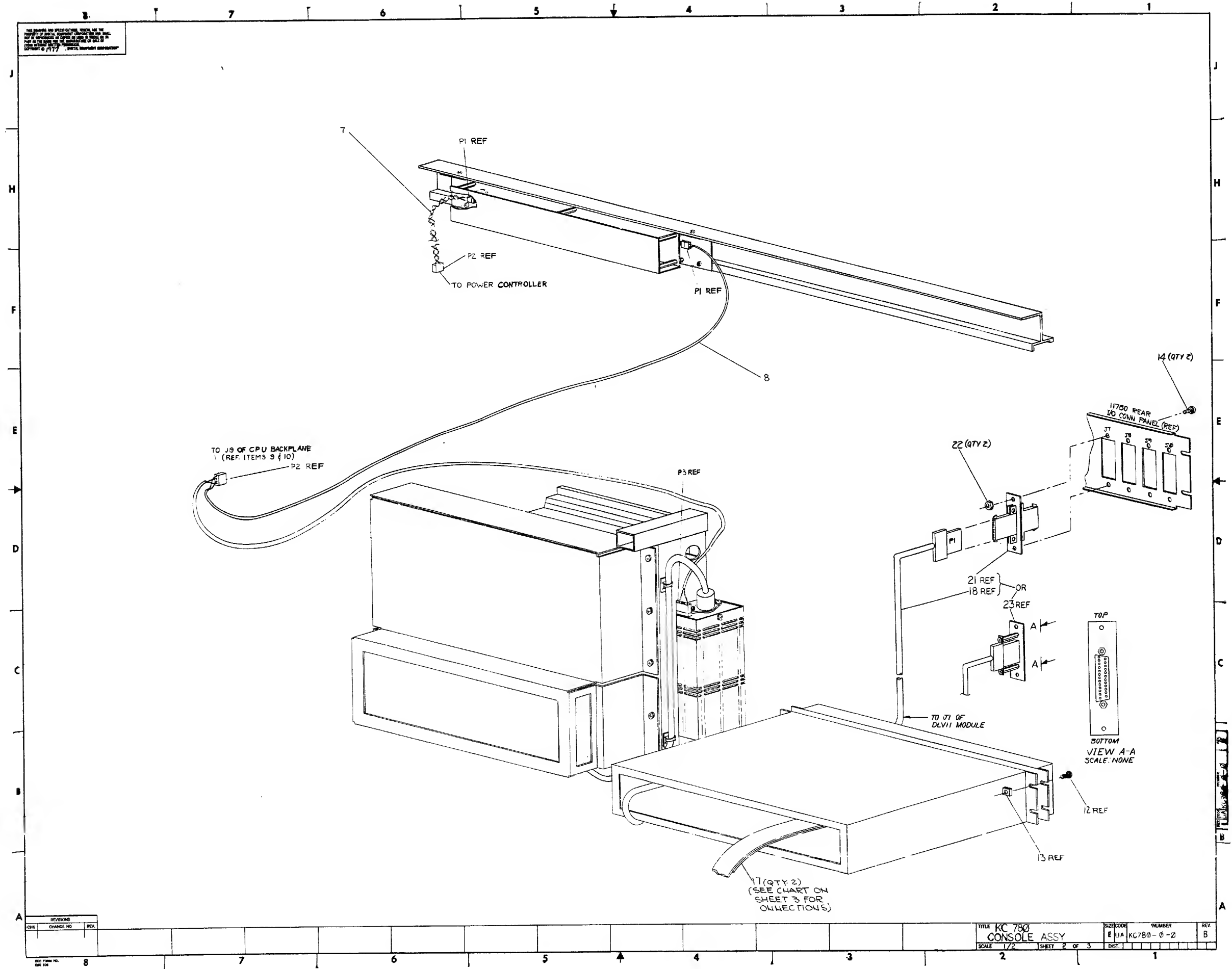
REV B

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NORTH SHAWMUT CORPORATION

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|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | H | J |
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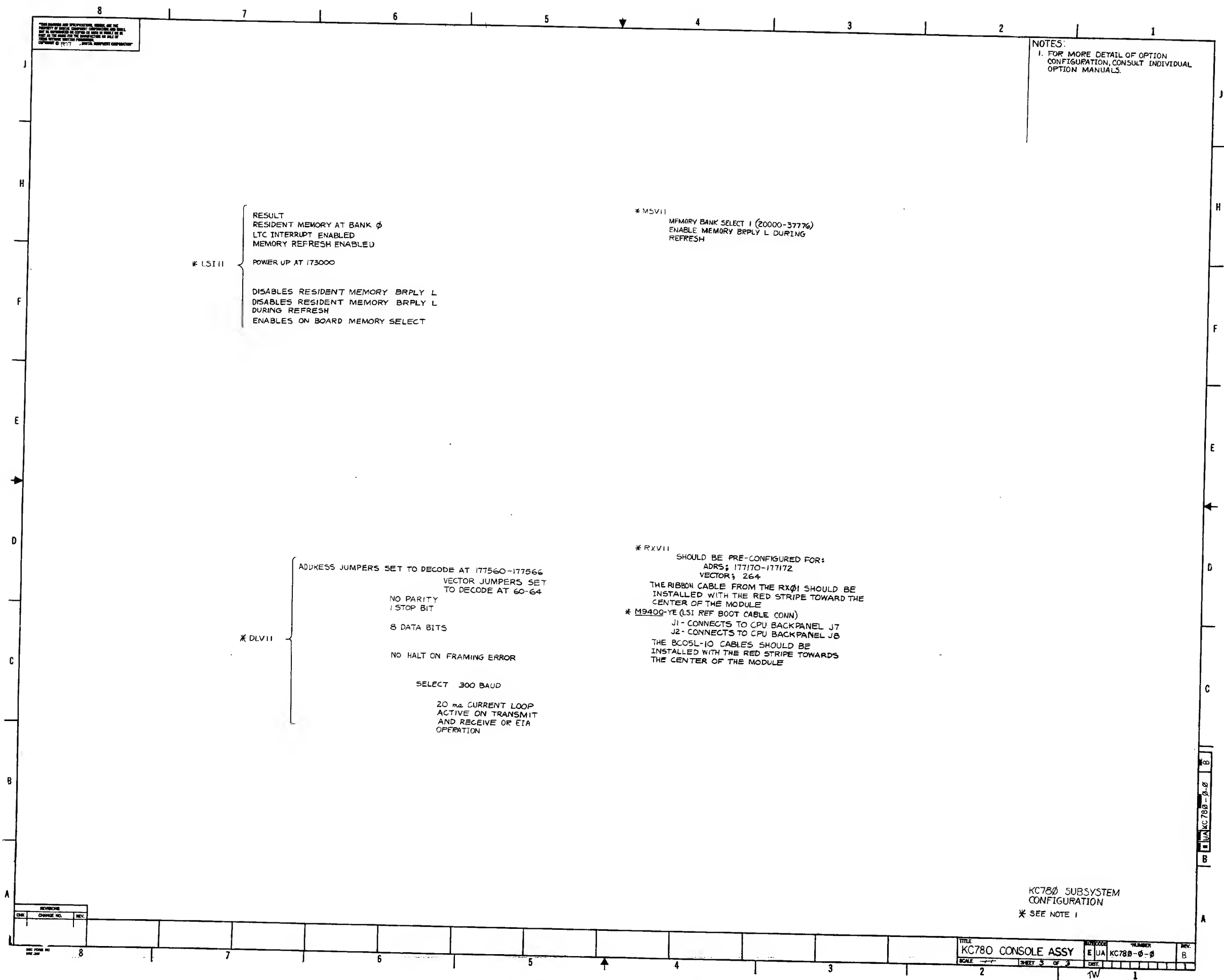
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REV.	CHG.	NO.	REV.
1			

TITLE	KC 780	SIZE/SCALE	1/2	SHEET	2	OF	3	NUMBER	KC780-0-20	REV.	B
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THIS DRAWING IS A REPRESENTATION OF THE
DESIGN OF THE SUBSYSTEM. IT IS NOT A
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NOTES:
1. FOR MORE DETAIL OF OPTION
CONFIGURATION, CONSULT INDIVIDUAL
OPTION MANUALS.

*LSI11
RESULT
RESIDENT MEMORY AT BANK 0
LTC INTERRUPT ENABLED
MEMORY REFRESH ENABLED
POWER UP AT 173000
DISABLES RESIDENT MEMORY BRPLY L
DISABLES RESIDENT MEMORY BRPLY L
DURING REFRESH
ENABLES ON BOARD MEMORY SELECT

*MSV11
MEMORY BANK SELECT 1 (20000-37776)
ENABLE MEMORY BRPLY L DURING
REFRESH

*DLV11
ADDRESS JUMPERS SET TO DECODE AT 177560-177566
VECTOR JUMPERS SET
TO DECODE AT 60-64
NO PARITY
1 STOP BIT
8 DATA BITS
NO HALT ON FRAMING ERROR
SELECT 300 BAUD
20 ma CURRENT LOOP
ACTIVE ON TRANSMIT
AND RECEIVE OR EIA
OPERATION

*RXV11
SHOULD BE PRE-CONFIGURED FOR:
ADDRS; 177170-177172
VECTOR; 264
THE RIBBON CABLE FROM THE RX01 SHOULD BE
INSTALLED WITH THE RED STRIPE TOWARD THE
CENTER OF THE MODULE
*M9400-YE (LSI REF BOOT CABLE CONN)
J1- CONNECTS TO CPU BACKPANEL J7
J2- CONNECTS TO CPU BACKPANEL J8
THE BC05L-10 CABLES SHOULD BE
INSTALLED WITH THE RED STRIPE TOWARDS
THE CENTER OF THE MODULE

KC780 SUBSYSTEM
CONFIGURATION
* SEE NOTE 1

REVISIONS		
DATE	CHANGE NO.	REV.

TITLE		NUMBER	REV.
KC780 CONSOLE ASSY		EUA	B
SCALE		SHEET 3 OF 3	1W

DIGITAL EQUIPMENT CORPORATION PARTS LIST

QUANTITY / VARIATION

NOTES:

MADE BY	P. BOUDREAU
DATE	3-AUG-77

CHECKED	R.J. RILEY
DATE	9-12-77

SECTION 1

ENG	K. DUGGAN
DATE	10-NOV-77

PROD	R. GIRARD
DATE	11-4-77

ISSUED SECTION	
----------------	--

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION
1	E-AD-7Ø16482-Ø-Ø	7Ø16482-Ø1	RXØ1 AND PIVOT ASSY
2	E-AD-7Ø16482-Ø-Ø	7Ø16482-Ø2	RXØ1 AND PIVOT ASSY
3	E-AD-7Ø16482-Ø-Ø	7Ø16482-Ø3	RXØ1 AND PIVOT ASSY
4	E-AD-7Ø13926-Ø-Ø		SCP AND CONSOLE ASSY
5	E-UA-11Ø3-Ø-Ø	11Ø3-AA	UNIT ASSY 11Ø3
6	E-UA-11Ø3-Ø-Ø	11Ø3-AB	UNIT ASSY 11Ø3
7	C-IA-7Ø14242-Ø-Ø	7Ø14242-Ø8	POWER CONTROL HARNESS
8	C-IA-7Ø14243-Ø-Ø	7Ø14243-21	FLOPPY RELAY SCP POWER HARNESS
9	E-UA-M8236-Ø-Ø		C.I.B.
1Ø	E-IA-7Ø13628-Ø-Ø		BACKPLANE ASSY
11	D-AD-7Ø14438-Ø-Ø		FRONT COVER ASSY
12		9ØØ97ØØ-ØØ	SCREW SEMS P.H. TRUSS 10-32x.5Ø
13		9ØØ7786-ØØ	RETAINER "U" NUT #10-32
14		9ØØ97Ø1-ØØ	SCREW SEMS P.H., HD. 6-32x.31
15	B-DD-MSV11-Ø		4K RAM
16	E-UA-M94ØØ-Ø-Ø		LSI REF BOOT CABLE CONN.
17	D-UA-BCØ5L-Ø-Ø	BCØ5L-1Ø	CABLE BCØ5L
18	D-IA-7Ø165Ø3-Ø-Ø	7Ø165Ø3-Ø4	TERMINAL ADAPTER CABLE (H7ØØ5)
19	B-DD-RXV11-ØØ		RXØ1 CONTROLLER
2Ø	B-MD-7414928-Ø-Ø		PIN, PIVOT

KC 780-AA

KC78Ø-AB

KC78Ø-AC

REF DESIGNATION

E.C.O. NO.	TW002
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TITLE

KC780 CONSOLE ASSY

ASSY NO.	
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E-UA-KC780-0-0

SIZE	
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B

CODE	DESCRIPTION	UNIT PRICE	QUANTITY	TOTAL
101	101	101	101	101
102	102	102	102	102
103	103	103	103	103
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177	177	177	177	177
178	178	178		

PL

NUMBER

KC780-0-0

REV.

B

SHEET 1 OF 2

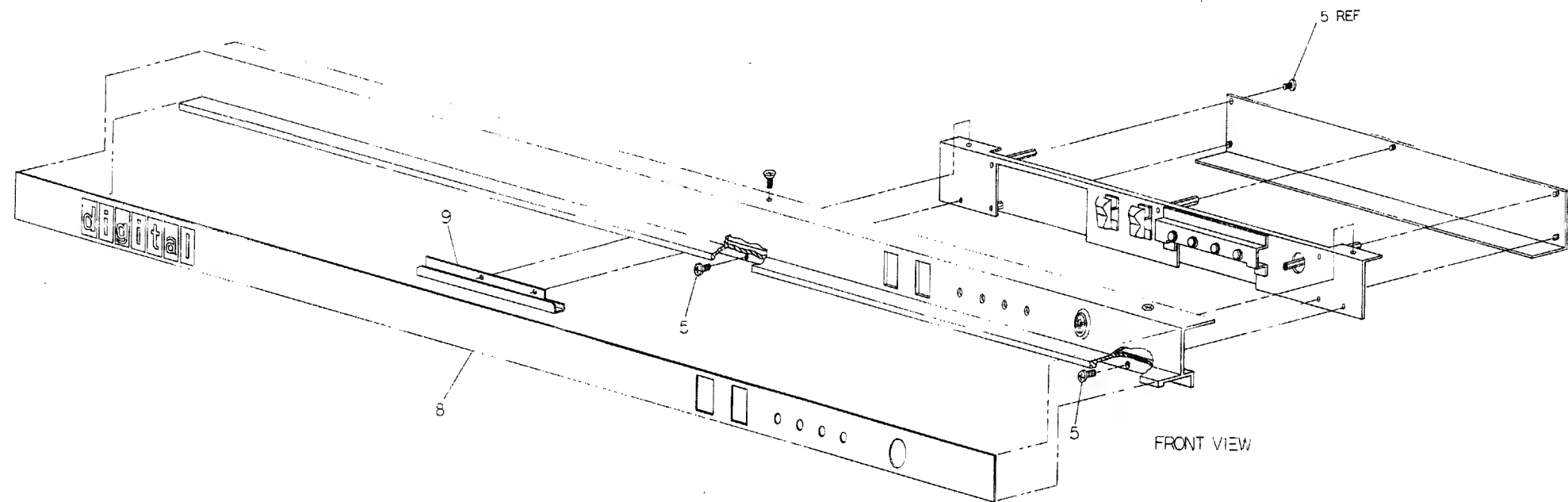
INSERTION PARTS LIST DATA BASE REV

DIGITAL EQUIPMENT CORPORATION PARTS LIST						QUANTITY / VARIATION								NOTES:					
MADE BY P. BOUDREAU DATE 3-AUG-77		CHECKED R.J. RILEY DATE 9-12-77		SECTION 1		KC780-AA	KC780-AB	KC780-AC											
ENG K. DUGGAN DATE 10-NOV-77		PROD R. GIRARD DATE 11-4-77		ISSUED SECTION 1															
ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION			REF DESIGNATION													
21	A-PL-H7005-0-0		H7005 FILTER CONNECTOR			REF	REF	REF											
22		9006560-00	NUT, KEPS #6-32			2	2	2											
23	D-UA-BC03L-0-0	BC03L-05	FILTERED CABLE ASSY BC03L			REF	REF	REF											
E.C.O. NO.																			

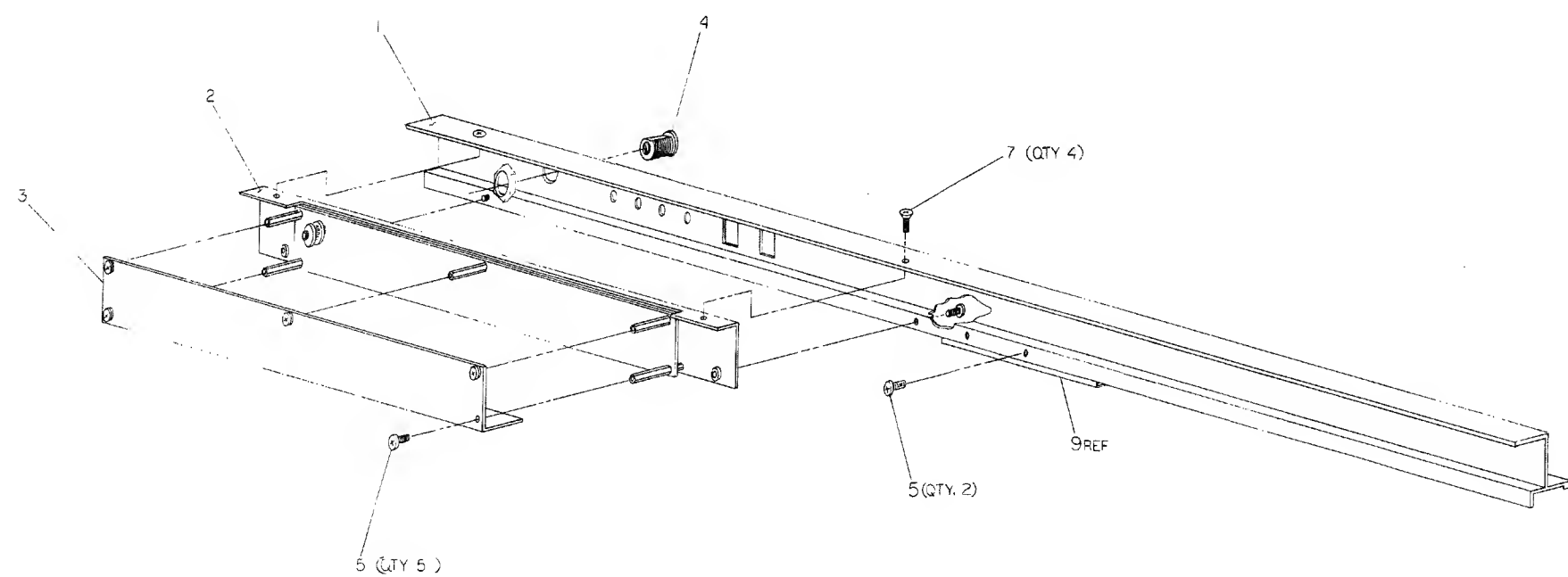
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					SHEET 2 OF 2	INSERTION PARTS LIST DATA BASE REV			

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NOTES:
1. REMOVE PEEL-OFF LINER OF ITEM #8 AND ASSEMBLE TO ITEM #1 AFTER #4 & 2 HAVE BEEN ASSEMBLED TO ITEM #1.



FRONT VIEW



REAR VIEW

FOR PARTS LIST SEE A PL 7013026 0 0

DESCRIPTION		DWG. PART NO.		TYPE NO.	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES					
ANGLES		CLOSE-UP		NOMINAL DIMENSION RANGE INCHES	
1st 3rd		2nd 4th		5th 6th 7th 8th 9th 10th	
SURFACE		CHECK ONE		FINISH	
QUALITY		IN		BY	
QUANTITY & VARIATION		PREFERRED		A.M.	
THIRD ANGLE PROJECTION		DRN. ENGINE		FIRST USED ON	
REMOVE BURRS AND BREAK SHARP CORNERS		CHKD.		VAX 11/780	
DO NOT SCALE DWG		ENG. DATE		TITLE	
MATERIAL		PROD. DATE		SCP AND CONSOLE ASSY.	
SEE PARTS LIST		NEXT HIGHER ASSY.		EIA-RS-780-C	
FINISH		SCALE		SIZE CODE	
SHEET		OF		NUMBER	
DIST.		REV.		7013026-0-0	

[illegible]

DEC FORM
DRA 110

WIRE TABLE 115V #230V							
FROM				TO			
ITEM NO	DESCRIPTION	CONN	WITH	CONN	WITH	ITEM NO	DESCRIPTION
14	18	BLK	J3-BLU	ITEM 13	K1 GRN	ITEM 13	
15		GRN	J3-GRN-YEL		J2-GRN		
16		WHT	J3-BRN		J2-WHT		
14		BLK	K1 BOTTOM	ITEM 13	J2-BLK	ITEM 13	
7	18	BLK	J1-1		K1(-)		
		WHT	J1-3		K1(+)		

LEGEND		
ASSY. NUMBER	VARIATION	REMARKS
7013679-00	USING ITEMS 3+5	115V OPERATION
7013679-01	USING ITEMS 4+6	230V OPERATION

[illegible]

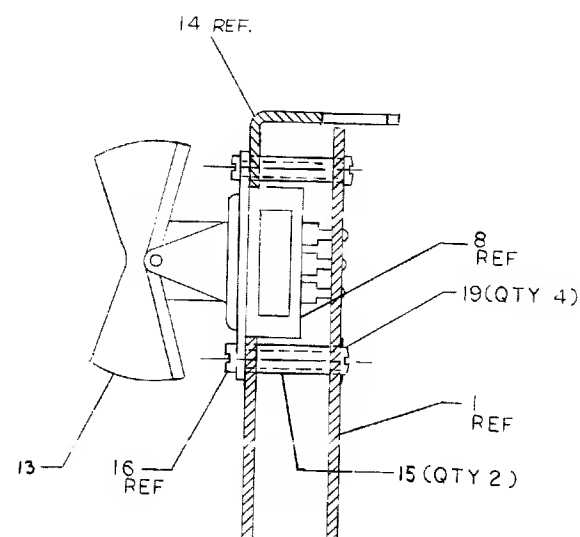
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS PARTS LIST					QUANTITY VARIATION												
MADE BY MARK CHOINIERE		CHECKED D. HEALY		SECTION		7013679-00 7013679-01											
DATE 11 JUNE 77		DATE 13 JUNE 77		1													
ENG <i>Ken [Signature]</i>		PROD <i>R. [Signature]</i>		ISSUED SECT. 1													
DATE 7/21/79		DATE 8-4-77															
ITEM NO.	DWG NO./PART NO.	DESCRIPTION															
1	D-IA-7417858-0-0	BACK PLATE (RELAY ASSY)				1 1											
2	1214417-00	RELAY, SOLID STATE				1 1											
3	1210203-00	RECEP., PWR 15A, 125V AC/DC FEMALE				1 -											
4	1210202-00	RECEP., PWR 15A, 250V AC/DC FEMALE				- 1											
5	1209983-00	CONN. POWER 15A, 125V AC/DC MALE				1 -											
6	9008854-00	CONN. POWER 15A, 250V AC/DC MALE				- 1											
7	B-IA-7014449-0-0	CABLE, RELAY CONTROL				1 1											
8	9006022-01	SCREW, PHL, HD. PAN, #6 - 32 x .38				2 2											
9	9006037-01	SCREW, PHL, HD. PAN #8 - 32 x .38				2 2											
10	9006633-00	WASHER, INT. TOOTH LOCK #6				2 2											
11	9006634-00	WASHER, INT. TOOTH LOCK #8				2 2											
12	9006560-00	NUT, KEPS #6 - 32				2 2											
13	9007929-00	RING TERMINAL, RED #22-16 WIRE				8 8											
14	9107360-66	WIRE, STRND, 18 AWG (BLU)				A/RA/R											
15	9107410-54	WIRE, STRND, 18 AWG (GRN-YEL)				A/RA/R											
16	9107360-11	WIRE, STRND, 18 AWG (BRN)				A/RA/R											
17	9006558	NUT, HEX				2 2											
TITLE		ASSY NO.		SIZE	CODE	NUMBER				REV	ECO NO.						
RELAY ASSY 115V & 230V		E-IA-7013679-0-0		A	PL	7013679-0-0				A	7013679-00001						
		SHEET 1 OF 1		DIST													

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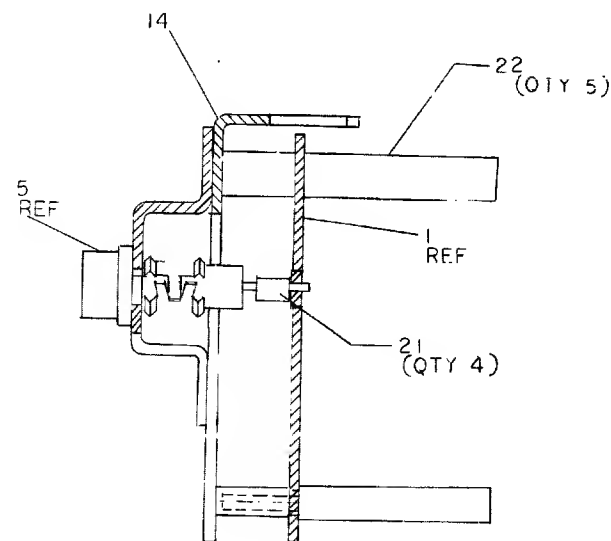
COMPONENT SIDE VIEW

SCP ASSEMBLY NOTES

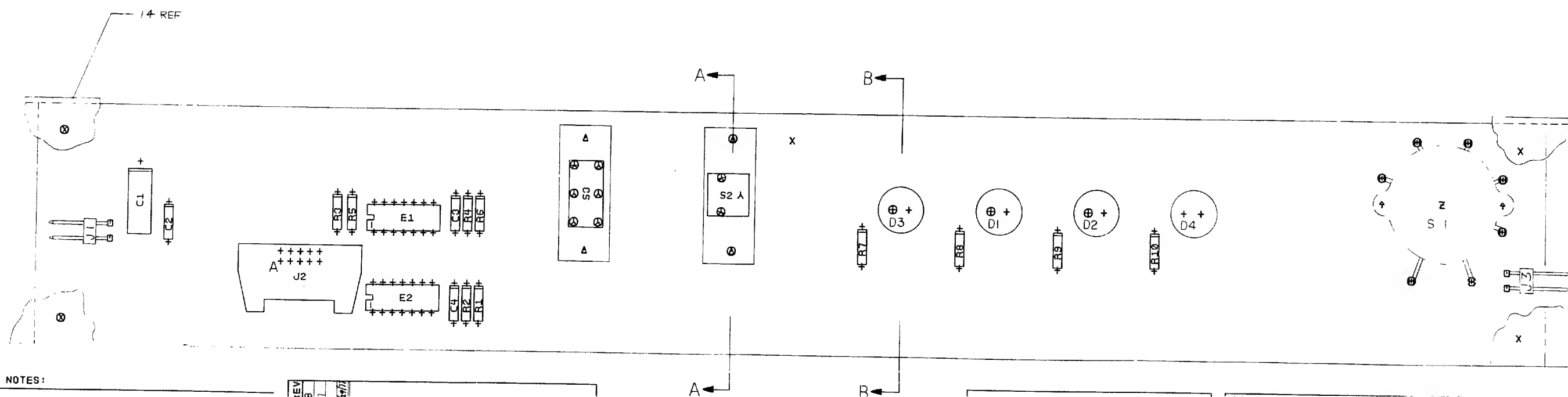
1. ASSEMBLE ITEMS 2,3,6,9,10,11,12, AND 20 IN THEIR APPROPRIATE LOCATIONS TO ITEM 1.
2. ASSEMBLE ITEM 21 TO THE SHORT LEAD OF ITEMS 4 AND 5. REMOVE CLIP NUTS FROM DIODES.
3. ASSEMBLE ITEMS 15 TO ITEMS 1 USING ITEM 16 (SEE SECTION A-A) FOUR PLACES.
4. INSERT L.E.O.'S THROUGH ITEM 14 WITH RED LEO AT BOTH OUTSIDE POSITIONS. THE L.E.O.'S WILL BE INSTALLED IN THE P.C. BOARD WITH THE SHORT SOCKETED LEAD TO THE RIGHT AS VIEWED FROM THE COMPONENT SIDE OF THE BOARD. REPLACE THE CLIP NUTS, MAKE SNUG AGAINST ITEM 14
5. INSERT ITEMS 7 AND 8 THROUGH ITEM 14. MAKE ALIGNMENT TO P.T.H.'S AND THEN TO ITEM 15. FASTEN ITEMS 7 AND 8 USING ITEM 16.
6. FROM P.C. BOARD SIDE, FASTEN ITEMS 22 TO ITEMS 14 THROUGH ITEM 1
7. SOLDER ALL L.E.O.'S AND ROCKER SWITCHES.



SECTION A-A
SCALE: 2/1



SECTION B-B
SCALE: 2/1



NOTES:

CHANGE NO	REV
1	B
2	A
3	A
4	A
5	A
6	A
7	A
8	A
9	A
10	A
11	A
12	A
13	A
14	A
15	A
16	A
17	A
18	A
19	A
20	A
21	A
22	A
23	A
24	A
25	A
26	A
27	A
28	A
29	A
30	A

ETCH REV. 6
P.C. DESIGN DATA BASE REV. 6

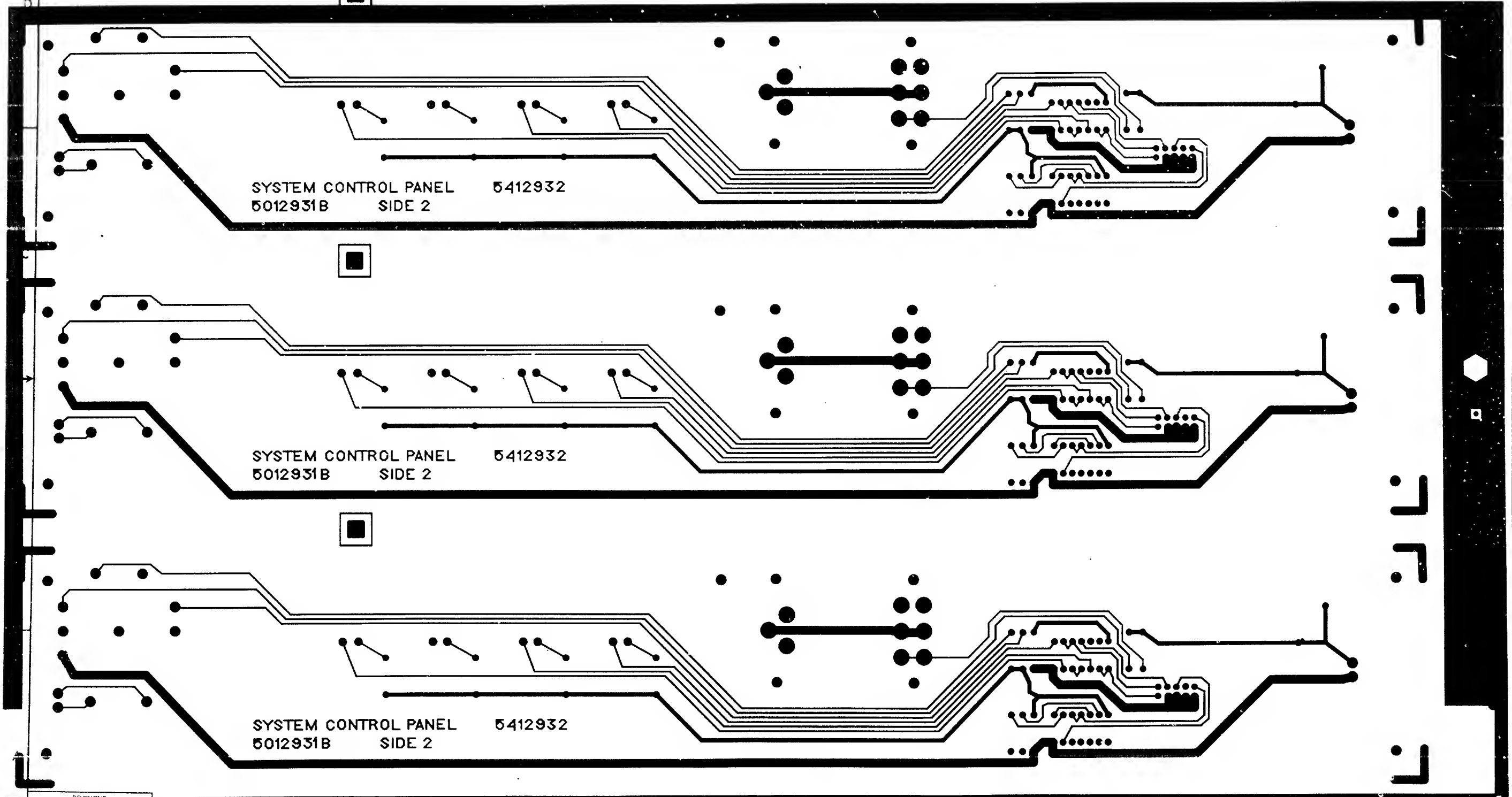
SIGNATURES	DATE
DRN.	2/1/77
CHK'D	2/1/77
ENG.	2/1/77
PROD. ENG.	2/1/77
SCALE 2-1	2/1/77
SHT. 1 OF 3	2/1/77
NEXT HIGHER ASSY. B DD 54 129322 0-0	

digital

TITLE SYSTEM
CONTROL PANEL

SIZE CODE NUMBER REV
D UA 54-129322-0-0 B

1 MS#



DIGITAL EQUIPMENT CORPORATION PARTS LIST				QUANTITY / VARIATION												NOTES:			
MADE BY M. FUNARO DATE 26 APR 77		CHECKED G. GIDDINGS DATE 6 MAY 77		SECTION															
ENG <i>Kenneth J. DeStefano</i> DATE 5/30/77		PROD <i>Mike Tunkla 10/5/77</i>		ISSUED SECTION															
ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	5412932-0-0													REF DESIGNATION		
1	D-MD-5012931-0-0	5012931	ETCH BOARD														C2,C3,C4		
2		10-12784-00	CAPACITOR, .047uf, 50V	3													C1		
3		10-12084-01	CAPACITOR, 8uf, 25V	1													D1,D2		
4		12-12749-01	LED GREEN	2													D3,D4		
5		12-12749-00	LED RED	2													R1-R6		
6		13-00365-00	RESISTOR, 1K, 1/4W, 5%	6													S3		
7		12-11485	SWITCH, SLIDE, DPDT	1													S2		
8		12-05375	SWITCH, SLIDE, SPDT	1													S1		
9		12-14476	SWITCH, ROTARY, 5 POS.	1													J2		
10		12-09941-05	HEADER, RT ANGLE, 10 PIN	1													J1,J3		
11		12-12204-00	HEADER, 2 PIN	2													E1,E2		
12		19-12746-00	I.C. DEC 74S37	2															
13		12-05317-08	ROCKER SWITCH OFF WHITE	2															
14	E-IA-7014437-0-0	7014437-00	COMP. MTG. BRK'T. WELD.	1															
15		90-06843-00	SPACER, THRD #4-40 x 3/8 LG.	4															
16		90-08032-01	SCR, PHL HD PAN #4-40 x 3/16 LG.	8															
17		90-06022-01	SCR, PHL HD PAN #6-32 x 3/8 LG.	5															
18		90-06707-00	WASHER, NYLON #6	5															
19		90-06706-00	WASHER NYLON #4	4															
20		13-00250-00	RESISTOR 150, 1/4W, 5%	4													R7-R10		
ECO. NO. 0000																			
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						SHEET 1 OF 2		INSERTION PARTS LIST DATA BASE REV A											

DIGITAL EQUIPMENT CORPORATION PARTS LIST

QUANTITY / VARIATION

NOTES:

MADE BY	M. FUNARO	CHECKED	G. GIDDINGS	SECTION
DATE	26 APR 77	DATE	6 MAY 77	

ENG DATE	<i>Kenneth D. Desim</i> <i>9/30/77</i>	PROD DATE	<i>Mike Venable</i> <i>10-5-77</i>	ISSUED SECTION
-------------	---	--------------	---------------------------------------	----------------

[illegible][illegible]

E.C.O. NO. _____

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TITLE	SYSTEM CONTROL PANEL
-------	----------------------

ASSY NO.	D-UA-5412932-0--0
----------	-------------------

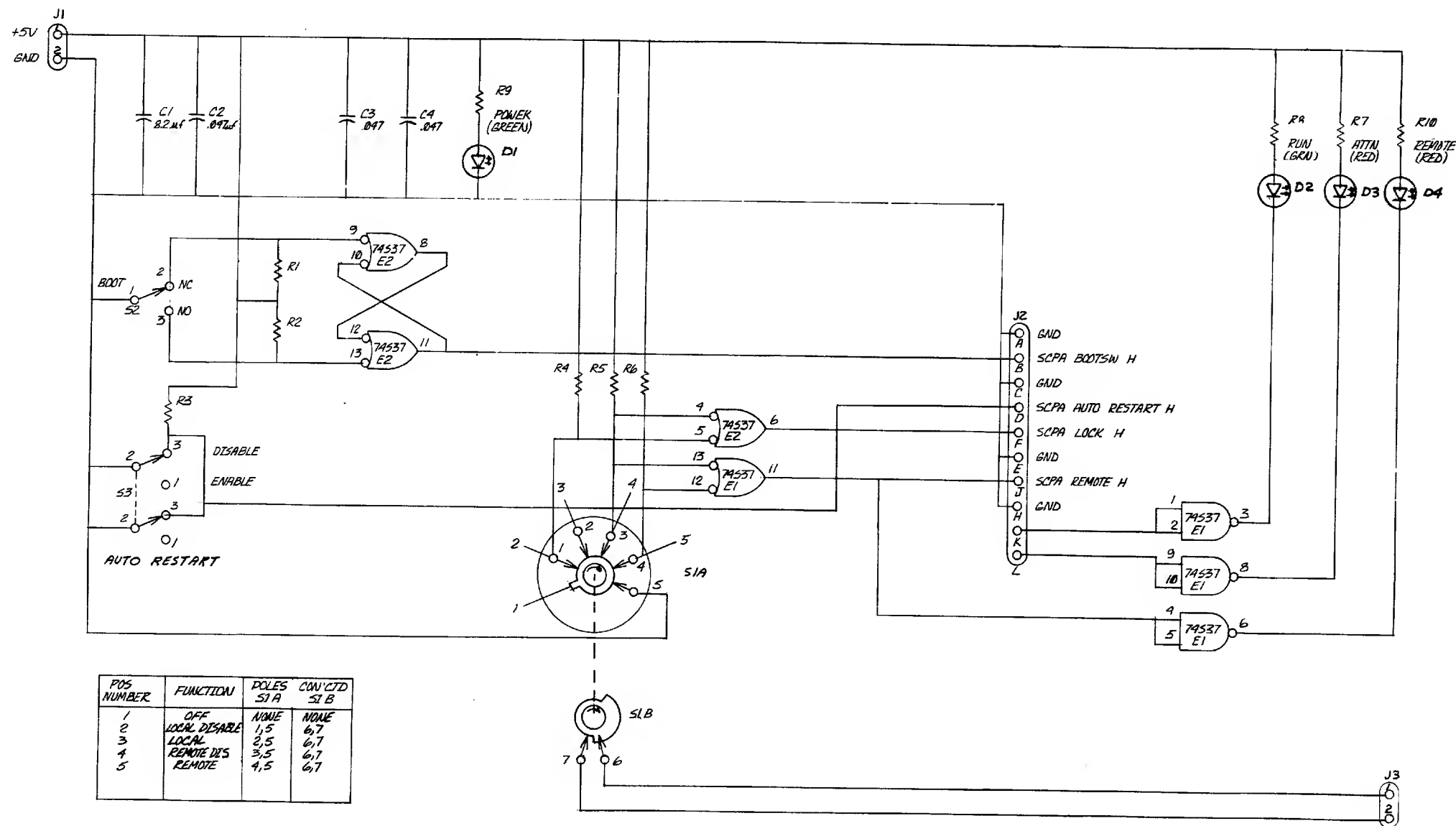
SIZE	CODE	NUMBER
B	PL	5412932-0-0

REV.
B

SHEET 2 OF 2

INSERTION PARTS LIST DATA BASE REV

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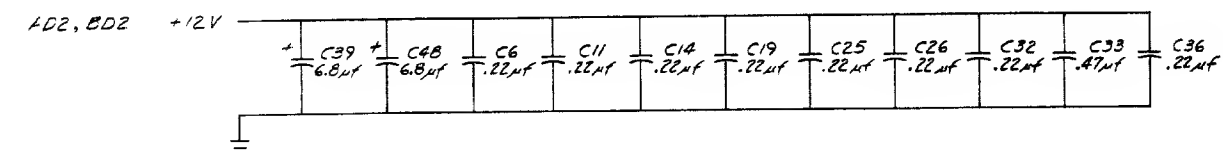
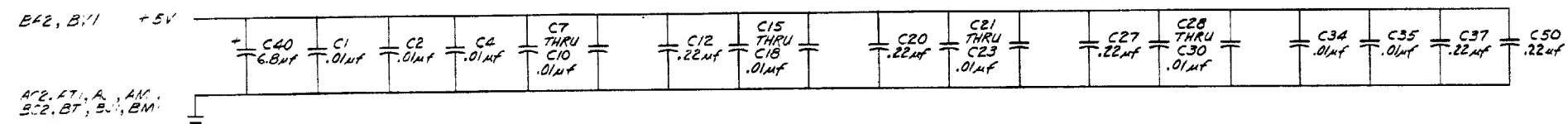
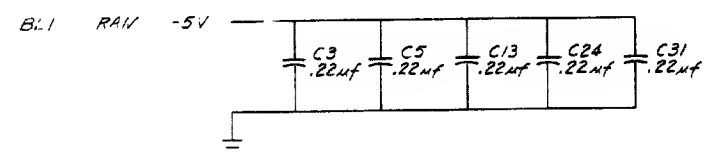


POS NUMBER	FUNCTION	POLES S1A	CON'CTD S1B
1	OFF	NONE	NONE
2	LOCAL DISABLE	1,5	6,7
3	LOCAL	2,5	6,7
4	REMOTE DIS	3,5	6,7
5	REMOTE	4,5	6,7

NOTES:
1. ALL RESISTORS ARE 1K 1/4W 5% O.C. EXCEPT THOSE WITH LED INDICATORS WHICH ARE 150, 1/4W, 5%

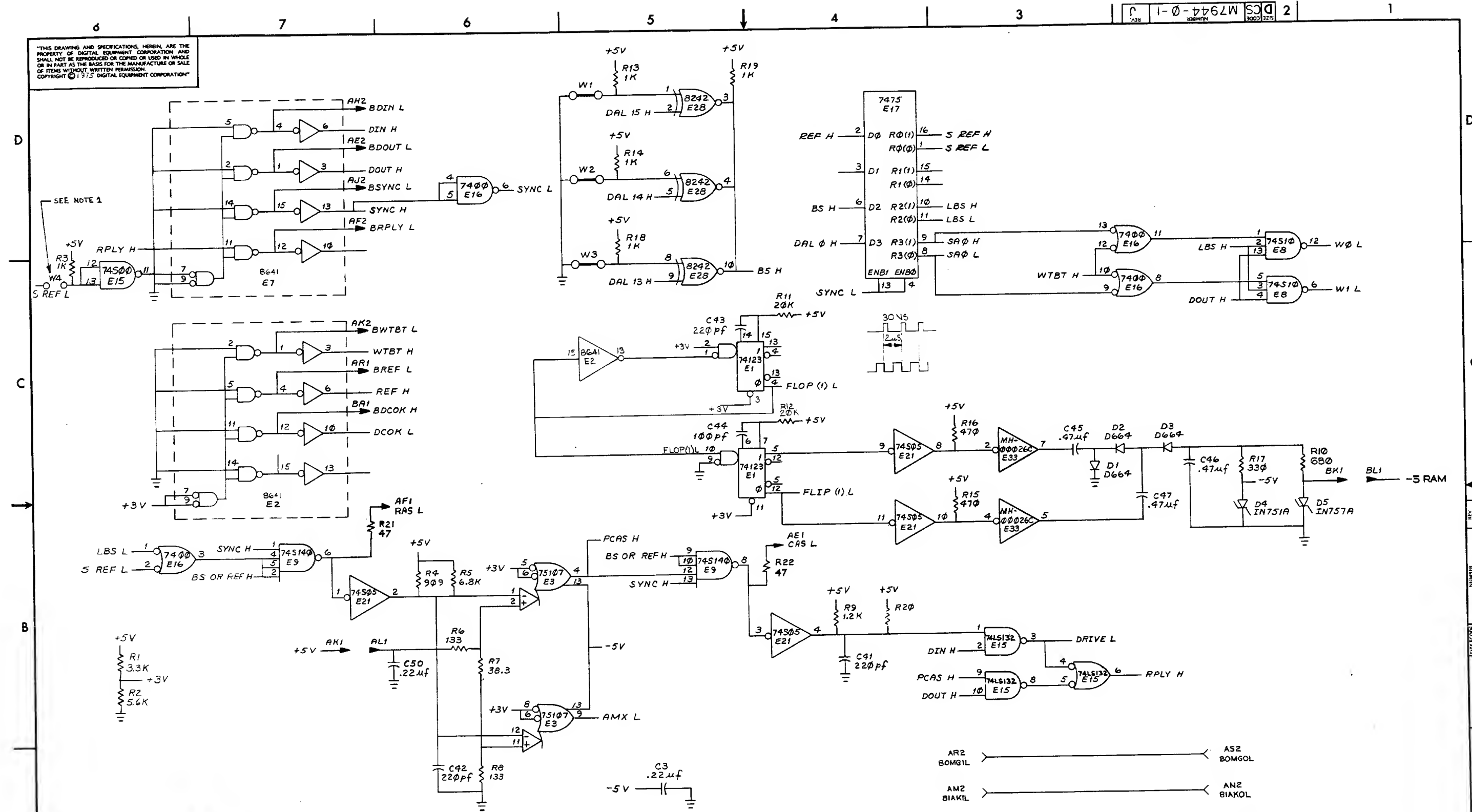
DRN. <i>E. Thase</i> 8-5-77	FIRST USED ON	digital
CHK'D <i>Thase</i> 8-5-77	TITLE	
ENG. <i>Thase</i> 8-5-77	SYSTEM	
PROD. <i>Thase</i> 8-5-77	CONTROL PANEL	
NEXT HIGHER ASSY.		
SCALE	SIZE CODE	NUMBER
SHEET / DF /	DIST.	5412932-0-1
		REV. A

NOTES: 1. W4 IS A CUSTOMER OPTION
NOT TO BE INSERTED

[illegible]DEC FORM 100
OCT 1975-E

SEE OFF SHEET PARTS LIST									
QTY		REF. DESIGNATION		DESCRIPTION		PART NO.		ITEM NO.	
FIRST USED ON OPTION MODEL LSI II						PARTS LIST			
ETCH BOARD REV.		C							
DRAWN <i>[Signature]</i> DATE 3/16/77	TITLE digital								
CHK'D. <i>[Signature]</i> DATE 12/15/77									
ENG. <i>[Signature]</i> DATE 20 NOV 77									
PROJ. ENG. <i>[Signature]</i> DATE 30 JAN 77									
PROD. <i>[Signature]</i> DATE 1/19/77									
NEXT HIGHER ASSY MSVII-B									
SIZE CODE D CS	NUMBER M7944-O-1	REV. J							
SHEET 1	OF 4								
SEMICONDUCTOR CONVERSION CHART									

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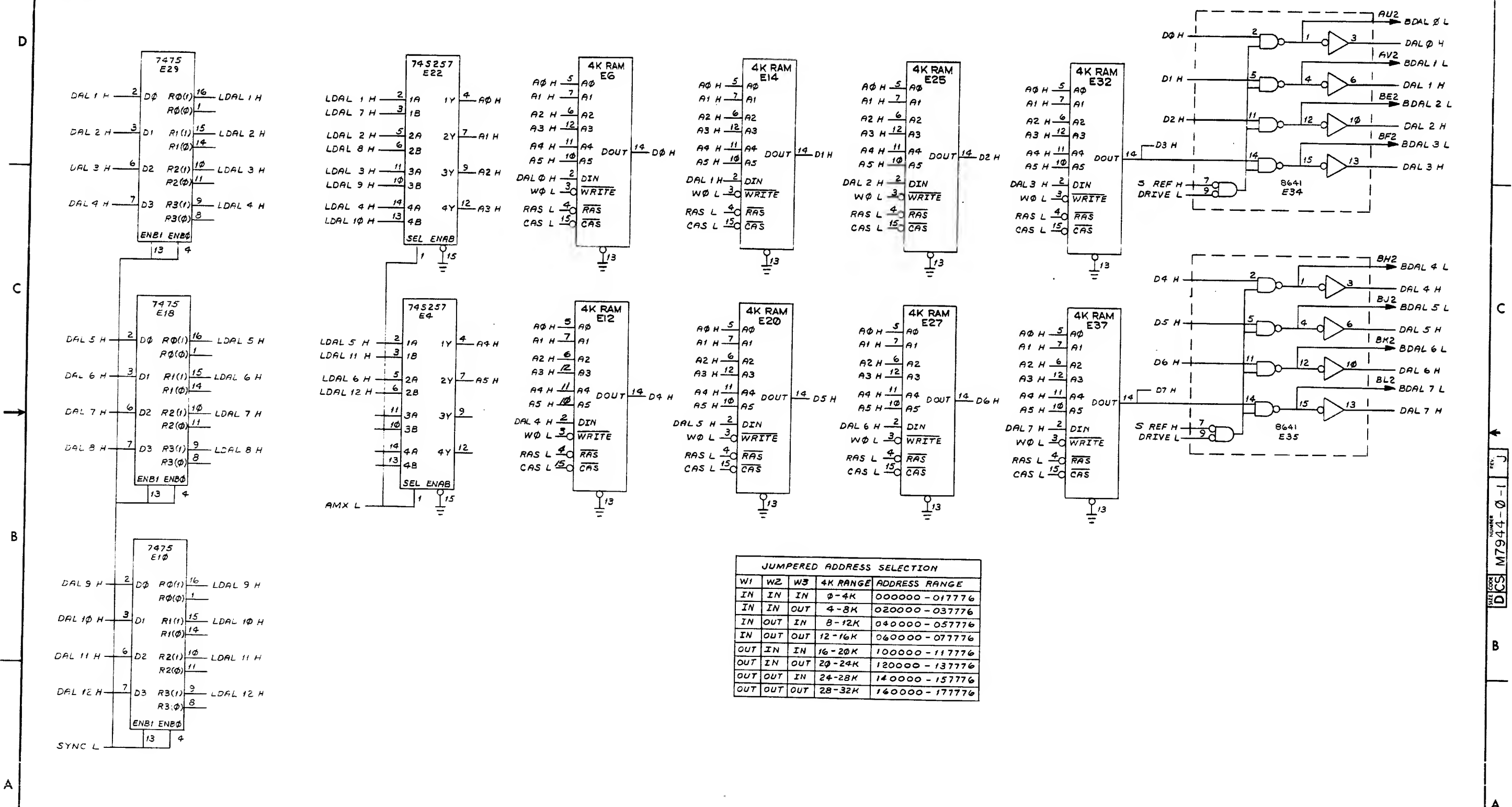


(TIMING GENERATOR & CHARGE PUMP)

REVISIONS			TITLE				SIZE		NUMBER		REV.			
CHK	CHANGE NO.	REV.	4K RAM				DCS	M7944-0-1		J				
			SCALE		SHEET		DIST.							
			11		2 OF 4									
DEC FORM NO. DWD 138			8		7		6		5		4	3	2	1

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DCS M7944-0-1 2



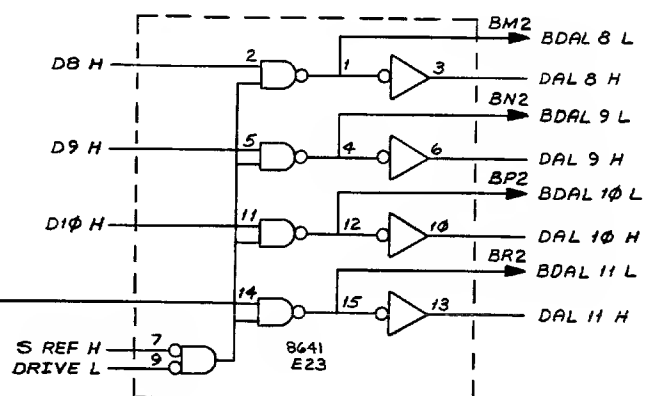
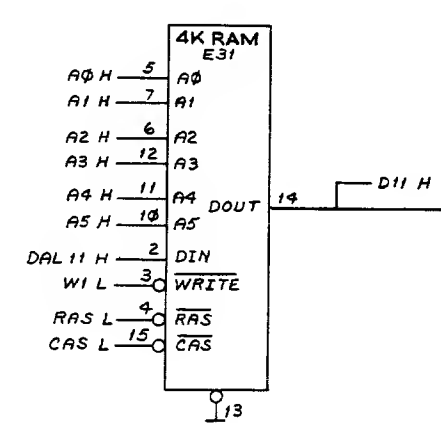
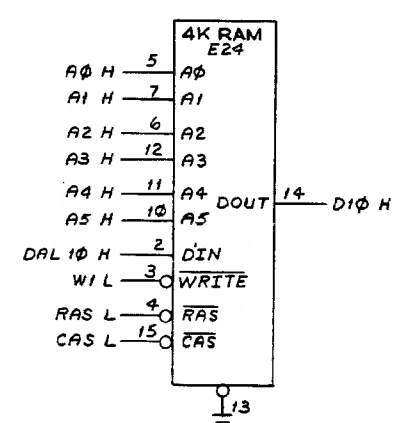
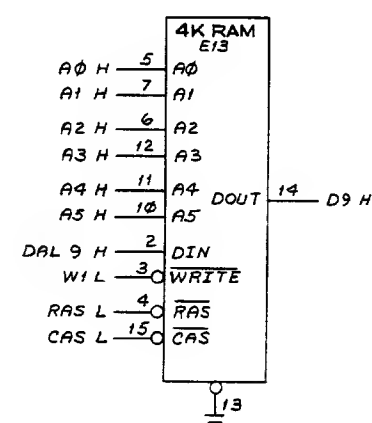
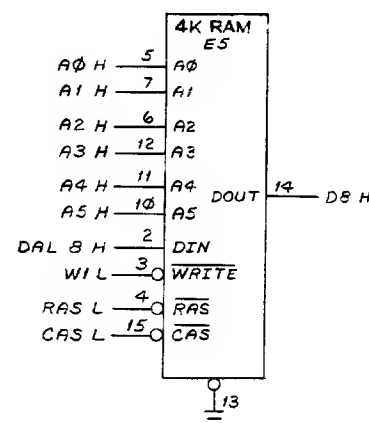
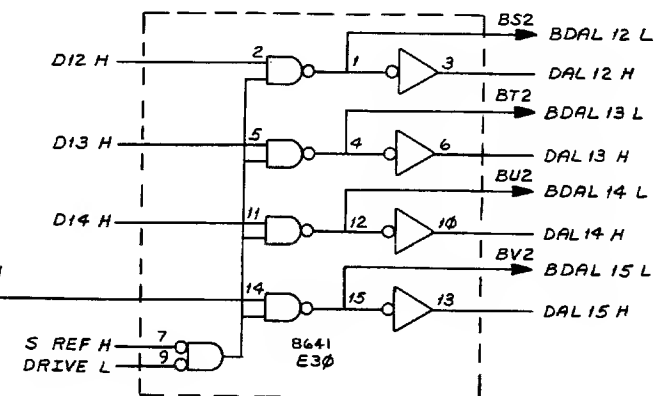
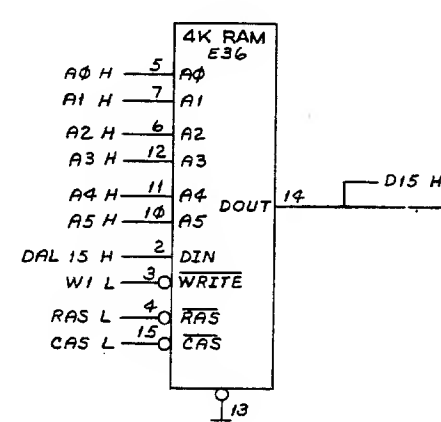
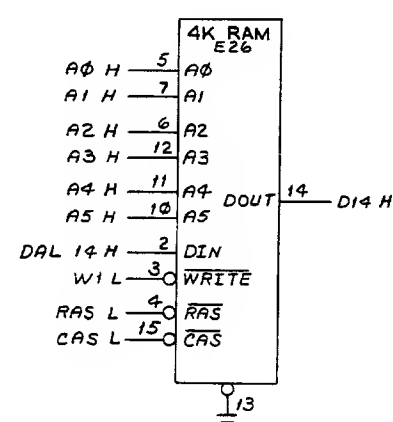
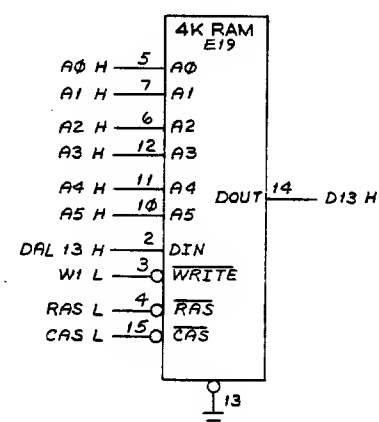
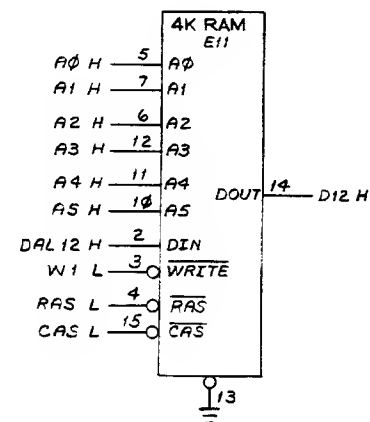
JUMPED ADDRESS SELECTION					
W1	W2	W3	4K RANGE	ADDRESS RANGE	
IN	IN	IN	0-4K	000000-017776	
IN	IN	OUT	4-8K	020000-037776	
IN	OUT	IN	8-12K	040000-057776	
IN	OUT	OUT	12-16K	060000-077776	
OUT	IN	IN	16-20K	100000-117776	
OUT	IN	OUT	20-24K	120000-137776	
OUT	OUT	IN	24-28K	140000-157776	
OUT	OUT	OUT	28-32K	160000-177776	

(RAM & DRIVER)

REVISIONS		
CHK	CHANGE NO	REV.

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1 2 3 4 5 6 7 8
JCS M7944-0-1
REV. J



REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. DED 138

(RAM & DRIVER)

TITLE	SIZE CODE	NUMBER	REV.
4K RAM	D CS	M7944-0-1	J
SCALE	SHEET	4 OF 4	DIST.

PN 1

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- NOTES:**
1. BD INIT L AND INIT H ARE SIGNALS GENERATED BY THIS MODULE THAT ARE USED ON THIS MODULE.
 2. A STANDARD ROM STARTING LOCATION FOR THE FOLLOWING BOOTSTRAPS HAS BEEN ESTABLISHED. ALL FUTURE REV II-X'S THAT INCLUDE ANY OF THESE BOOTSTRAPS SHOULD USE THE SAME STARTING LOCATIONS. IF A NEW BOOTSTRAP IS ESTABLISHED, PLEASE ECO THIS NOTE TO INCLUDE THE DEVICE AND STARTING LOCATION.

* PERTAINS TO REV II-AC AND J ONLY.
** PERTAINS TO REV II-HK AND L ONLY.
*** PERTAINS TO REV II-N ONLY.

BOOTSTRAP	STARTING LOCATION
*.RX01	165242
*.ABSOLUTE LOADER	165406
*.RK05	165650
*.CPU DIAGNOSTIC (MEMORY ADDIFYING)	173302
*.CPU DIAGNOSTIC (NON-MEMORY MODIFYING)	173000
*.MEMORY DIAGNOSTIC	173626
*.ODT	
***.REMOTE-II	173000
***.REMOTE-II SECONDARY DOWNLINE LOAD	173006
***.RX01	173700
***.RX02	173000

3. ADJUST R16 SO THAT THE DMA REFRESH FREQUENCY MEASURED AT E15 PIN8 IS AS FOLLOWS:
MAX FREQUENCY SETTING; 33.6 KHZ (29.76 μ s)
NOM FREQUENCY SETTING; 33.3 KHZ (30.034 μ s)
MIN. FREQUENCY SETTING; 33.0 KHZ (30.30 μ s)
THIS FREQUENCY IS PRE-SET AT THE FACTORY AND SHOULD NOT BE ALTERED.

4. FOR -YN VARIATION SUBSTITUTE THE FOLLOWING I.C.'S :
E19, P/N 23871A9-00
E22, P/N 23872A9-00
E25, P/N 23873A9-00
E29, P/N 23874A9-00

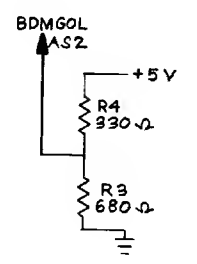
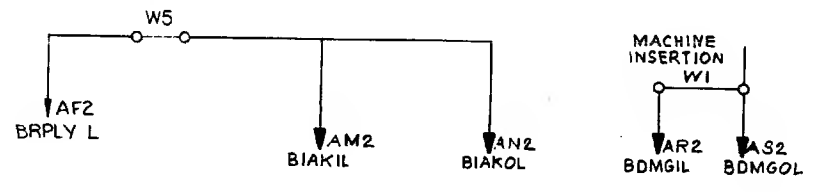
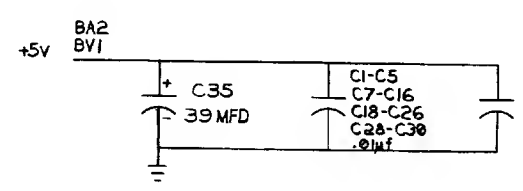
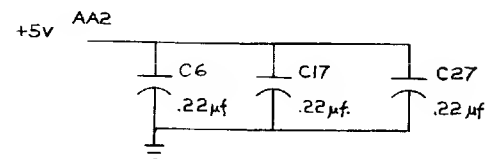
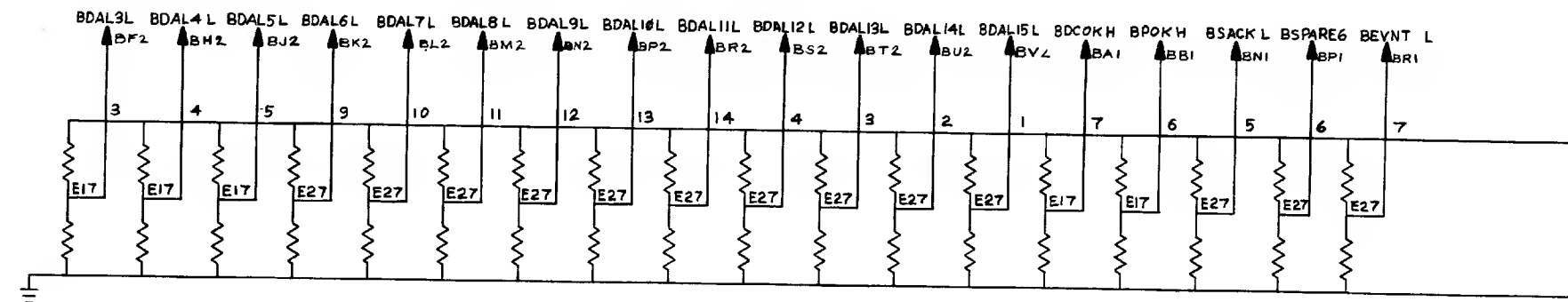
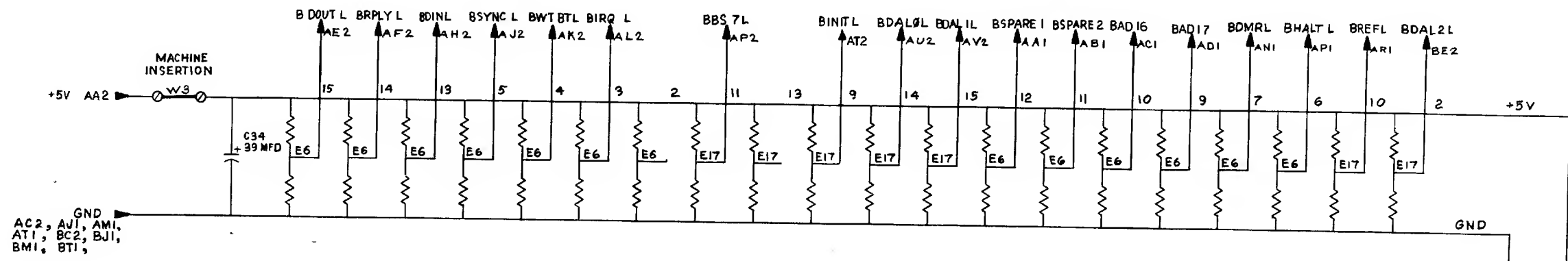
IC 5264	8	16
IC 8136	8	16
IC 74174	8	16
IC 8556	8	16
IC 8641	8	16
IC TYPE	GND	+5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE		
IC PIN LOCATIONS		

DEC FORM NO. 110-2

FIRST USED ON OPTION MODEL		QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
ETCH BOARD REV.		PARTS LIST				
D-PI		digital				
DRN. D. D. Smith		DATE 5/13/78		TITLE LSI REF. BOOT CONN.		
CHKD. J. Curtis		DATE 3-30-78				
ENG. P. Bennett		DATE 12-10-78				
PROJ. ENG. P. Bennett		DATE 12-10-78				
PRD. P. Bennett		DATE 12-10-78				
NEXT HIGHER ASSY						
DEC NO.	EIA NO.	DEC NO.	EIA NO.	SCALE 1 OF 5	SHEET 1 OF 5	
SEMICONDUCTOR CONVERSION CHART						
DIST.						

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1-0-006W S0 2

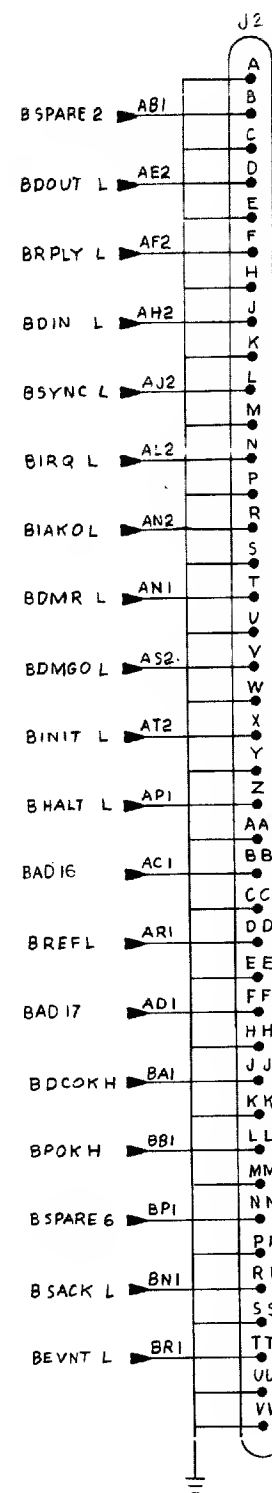


NOTE:
GROUND IS ON PIN 8
+5V IS ON PIN 16 OF EACH
RESISTOR PACK.

REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO. 138

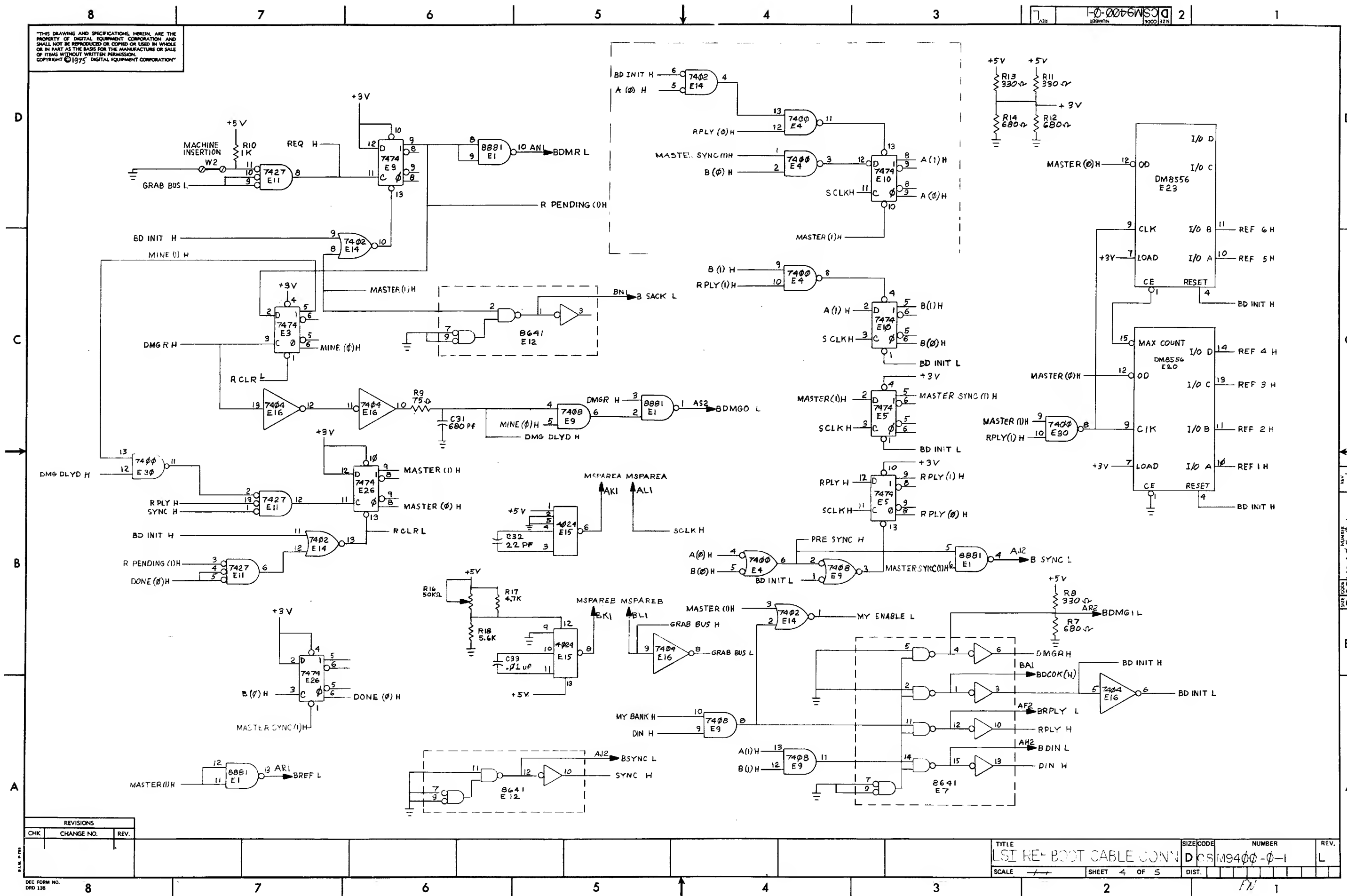
TITLE		SIZE CODE	NUMBER	REV.
LSI REF BOOT CABLE CONN		D	CS M9400-0-1	L
SCALE		SHEET	2 OF 5	
PN		1		



REVISIONS		
CHK	CHANGE NO.	REV.

DEC FORM NO
PRD 138

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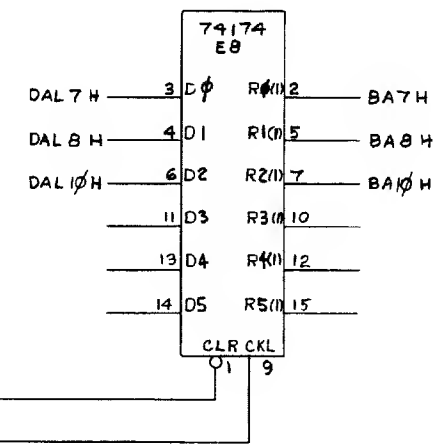
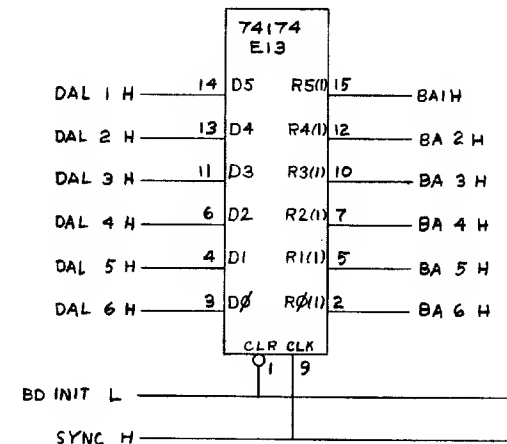
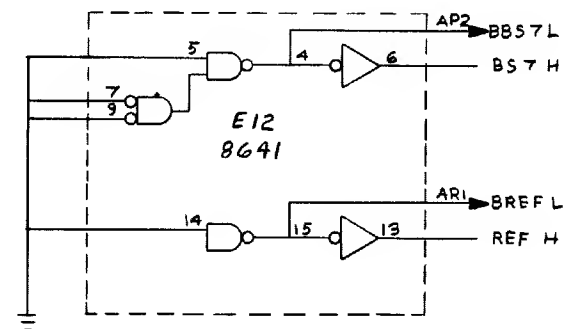
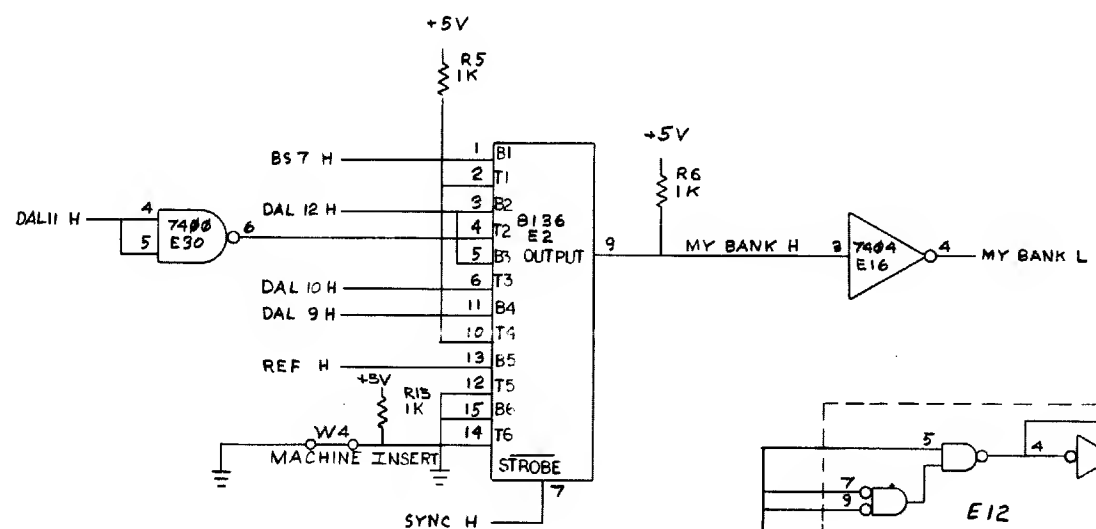
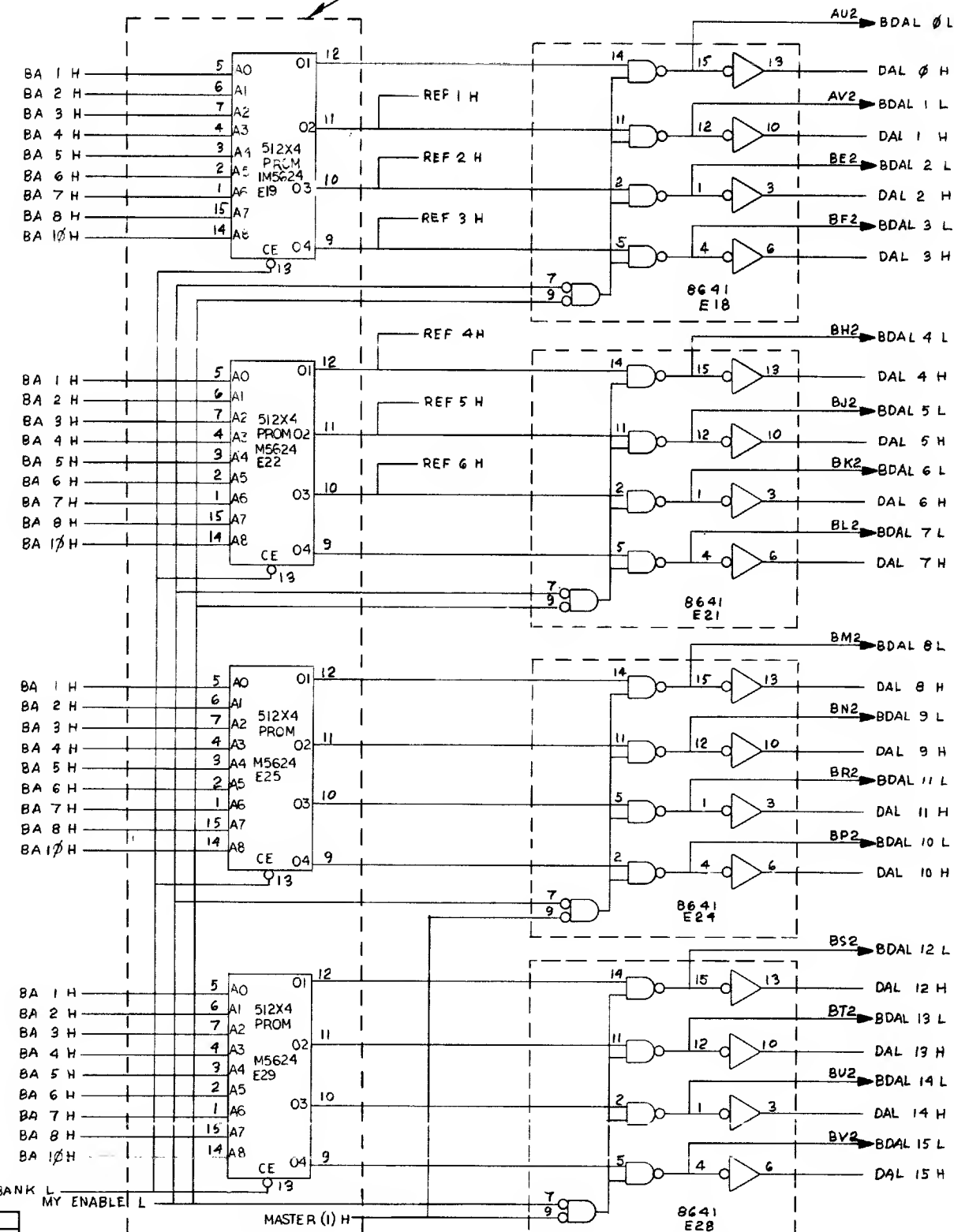


REVISIONS		
CHK	CHANGE NO.	REV.
	1	1

TITLE	SIZE CODE	NUMBER	REV.
LSI RE-BOOT CABLE CONN	D	M9400-0-1	L
SCALE	SHEET 4 OF 5	DIST.	

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SEE NOTE #4

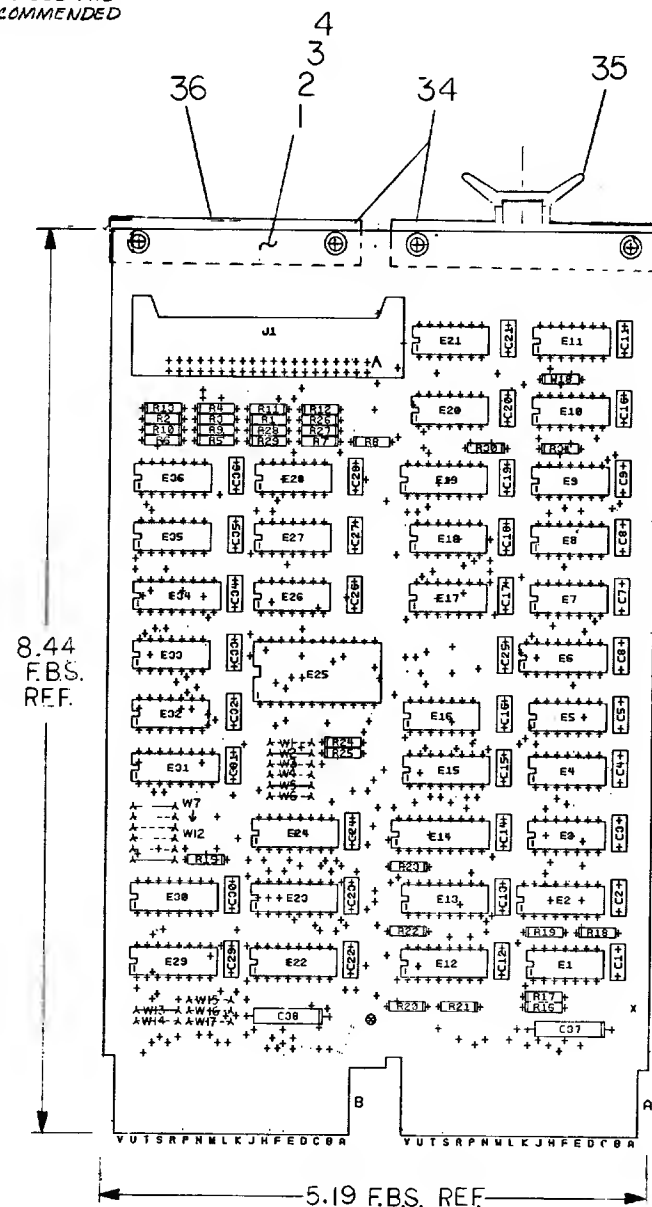


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE CODE	NUMBER	REV.
LSI REF BOOT CABLE CONN		D	CSM9400-0-1	L
SCALE		SHEET	DF	
		5	5	

AN 1

- 1.) JUMPER REMOVED EQUALS ASSERTION.
- 2.) REFERENCE DESIGNATIONS C2-C5 AND E2-E5 ARE NOT USED.
- 3.) JUMPERS ARE TO BE IMPLEMENTED USING 30 AWG WIRE-WRAP WIRE. SEE THE LOGIC HANDBOOK FOR RECOMMENDED TOOLS.



REF	DESCRIPTION	QTY	UNIT
REF	X-Y COORDINATE HOLE LOCATION		K-CO-M7946-B-4
REF	ASSY/DRILLING HOLE LAYOUT		O-AH-M7946-B-5
REF	MODULE ECO HISTORY		B-MH-M7946-B-6
1	ETCHED CIRCUIT BOARD		5011791
32	C1,C6 THRU C36		
2	CAPACITOR, .01, 100V, 20%		1001610
2	C37,C38		CAPACITOR, 6.8, 35V, 10%
1	J1		1005306
2	R16,R18		CONNECTOR, BERG, 40 PIN
9	R2,R4,R6,R8,R10,R12,R27,R29,R31		1209941-O2
9	R1,R3,R5,R7,R9,R11,R26,R28,R30		1300295
2	R17,R19		RESISTOR, 330 OHM, 1/4W, 5%
7	R15,R20,R21,R22,R23,R24,R25		RESISTOR, 390 OHM, 1/4W, 5%
1	E31		RESISTOR, 180 OHM, 1/4W, 5%
1	R13		RESISTOR, 680 OHM, 1/4W, 5%
1	E9		RESISTOR, 1K OHM, 1/4W, 5%
2	E10,E11		I.C. DEC 7474
2	E8,E26		I.C. DEC 7400
1	E21		I.C. DEC 7402
1	E35		I.C. DEC 74H11
2	E17,E28		I.C. DEC 8281
2	E18,E20		I.C. DEC 7404
1	E27		I.C. DEC 7450
3	E7,E16,E33		I.C. DEC 8881
1	E19		I.C. DEC 7408
1	E6		I.C. DEC 74H106
3	E12,E15,E24		I.C. DEC 74175
1	E25		I.C. DEC 74157
3	E1,E32,E36		I.C. DEC 74199
4	E13,E22,E23,E34		I.C. DEC 8640
2	E29,E30		I.C. DEC 8641
1	E14		I.C. DEC 8136
1	TP1		I.C. DEC OC993
1	W18		SPLIT LUG
4			JUMPERS
1			EYELETS
1			HANOLE, FLIP-CHIP MAGENTA
1			SPACER MAGENTA
34			PINS, STAKING
A/R	W2,W5,W7,W12,W13		WIRE-WRAP WIRE

A

S.I.M. P-714

I.C. DEC DCΦΦ3

9

18

I.C. DEC 74139

12

24

I.C. DEC 74H106

13

5

I.C. DEC 74175

8

16

I.C. DEC 74157

5

16

I.C. DEC 8649D

1

8

I.C. DEC 8641

8

16

IC TYPE

GND

+5V

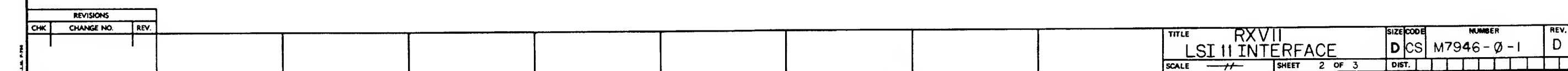
GND AND 5V ARE USUALLY PIN 7 AND 14
RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

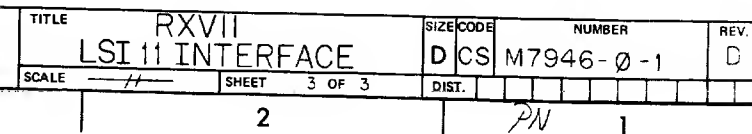
ALTERNATE PARTS LIST

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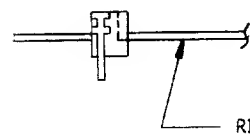
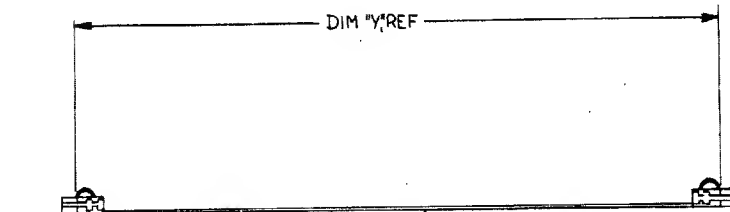
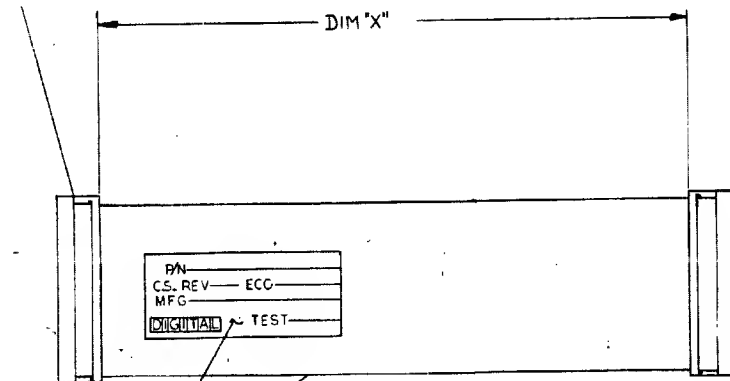


TITLE RXVII LSI II INTERFACE		SIZE CODE D CS	NUMBER M7946-0-1	REV. D
SCALE #	SHEET 2 OF 3	DIST.		

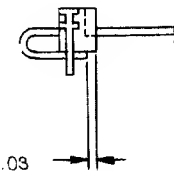


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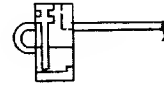
WIRE TABLE	
FROM	TO
PI-A	P2-VV
PI-B	P2-UU
PI-C	P2-TT
PI-D	P2-SS
PI-E	P2-RR
PI-F	P2-PP
PI-H	P2-NN
PI-J	P2-MM
PI-K	P2-LL
PI-L	P2-KK
PI-M	P2-JJ
PI-N	P2-IH
PI-P	P2-FF
PI-R	P2-EE
PI-S	P2-DD
PI-T	P2-CC
PI-U	P2-BB
PI-V	P2-AA
PI-W	P2-Z
PI-X	P2-Y
PI-Y	P2-X
PI-Z	P2-W
PI-AA	P2-V
PI-BB	P2-U
PI-CC	P2-T
PI-DD	P2-S
PI-EE	P2-R
PI-FF	P2-Q
PI-IH	P2-N
PI-JJ	P2-M
PI-KK	P2-L
PI-LL	P2-K
PI-MM	P2-J
PI-NN	P2-I
PI-PP	P2-H
PI-RR	P2-G
PI-SS	P2-F
PI-TT	P2-E
PI-UU	P2-D
PI-VV	P2-C
PI-WW	P2-B
PI-XX	P2-A



STEP #1



STEP #2



STEP #3

SEE NOTE 2

RIB SIDE

RIB SIDE

REV	CHANGE NO	DATE	BY	CHKD	REVISIONS
1	BC05L-00001	11-16-72	A		REVISED & REDRAWN
2	BC05L-00002	11-21-72	A		DWG NO WAS DUA-BC05L-00001
3	BC05L-00003	11-21-72	A		REVISED & REDRAWN
4	BC05L-00004	11-21-72	A		REVISED & REDRAWN
5	BC05L-00005	11-21-72	A		REVISED & REDRAWN
6	BC05L-00006	11-21-72	A		REVISED & REDRAWN
7	BC05L-00007	11-21-72	A		REVISED & REDRAWN
8	BC05L-00008	11-21-72	A		REVISED & REDRAWN
9	BC05L-00009	11-21-72	A		REVISED & REDRAWN
10	BC05L-00010	11-21-72	A		REVISED & REDRAWN
11	BC05L-00011	11-21-72	A		REVISED & REDRAWN
12	BC05L-00012	11-21-72	A		REVISED & REDRAWN
13	BC05L-00013	11-21-72	A		REVISED & REDRAWN
14	BC05L-00014	11-21-72	A		REVISED & REDRAWN
15	BC05L-00015	11-21-72	A		REVISED & REDRAWN
16	BC05L-00016	11-21-72	A		REVISED & REDRAWN
17	BC05L-00017	11-21-72	A		REVISED & REDRAWN
18	BC05L-00018	11-21-72	A		REVISED & REDRAWN
19	BC05L-00019	11-21-72	A		REVISED & REDRAWN
20	BC05L-00020	11-21-72	A		REVISED & REDRAWN
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27	BC05L-00027	11-21-72	A		REVISED & REDRAWN
28	BC05L-00028	11-21-72	A		REVISED & REDRAWN
29	BC05L-00029	11-21-72	A		REVISED & REDRAWN
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36	BC05L-00036	11-21-72	A		REVISED & REDRAWN
37	BC05L-00037	11-21-72	A		REVISED & REDRAWN
38	BC05L-00038	11-21-72	A		REVISED & REDRAWN
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40	BC05L-00040	11-21-72	A		REVISED & REDRAWN
41	BC05L-00041	11-21-72	A		REVISED & REDRAWN
42	BC05L-00042	11-21-72	A		REVISED & REDRAWN
43	BC05L-00043	11-21-72	A		REVISED & REDRAWN
44	BC05L-00044	11-21-72	A		REVISED & REDRAWN
45	BC05L-00045	11-21-72	A		REVISED & REDRAWN
46	BC05L-00046	11-21-72	A		REVISED & REDRAWN
47	BC05L-00047	11-21-72	A		REVISED & REDRAWN
48	BC05L-00048	11-21-72	A		REVISED & REDRAWN
49	BC05L-00049	11-21-72	A		REVISED & REDRAWN
50	BC05L-00050	11-21-72	A		REVISED & REDRAWN

LEGEND		
NUMBER	DIM 'X' VARIATION	DIM 'Y' (PRECUT) REF
BC05L-00	3IN ± 0.5IN	4.2 IN.
BC05L-10	15 IN ± 0.5IN	16.2 IN.
BC05L-15	20 IN ± 0.5IN	21.3 IN.
BC05L-2	2 FT ± 0.5IN	2.4 FT.
BC05L-3	3 FT ± 0.5IN	3 FT, 1.2 IN.
BC05L-4	4 FT ± 0.5IN	4 FT, 1.2 IN.
BC05L-5	5 FT ± 0.5IN	5 FT, 1.2 IN.
BC05L-6	6 FT ± 0.5IN	6 FT, 1.2 IN.
BC05L-7	7 FT ± 0.5IN	7 FT, 1.2 IN.
BC05L-8	8 FT ± 0.5IN	8 FT, 1.2 IN.
BC05L-9	9 FT ± 0.5IN	9 FT, 1.2 IN.
BC05L-10	10 FT ± 0.5IN	10.5 FT.
BC05L-11	11 FT ± 0.5IN	11 FT, 1.2 IN.
BC05L-12	12 FT ± 0.5IN	12 FT, 1.2 IN.
BC05L-13	13 FT ± 0.5IN	13 FT, 1.2 IN.
BC05L-14	14 FT ± 0.5IN	14 FT, 1.2 IN.
BC05L-15	15 FT ± 0.5IN	15 FT, 1.2 IN.
BC05L-16	16 FT ± 0.5IN	16 FT, 1.2 IN.
BC05L-0E	5 IN ± 0.5IN	6.2 IN.

NOTES

1. ASSY OF ITEM #1 (CONNECTOR) TO ITEM #2 (CABLE) IS AS FOLLOWS:
A. CABLE TO BE CUT SQUARE AT BOTH ENDS.
STEP 1: INSERT CABLE THRU SLOT IN TOP HALF OF CONNECTOR. NOTE POSITION OF CABLE RELIEF SHOWN AS DOTTED LINE. RIBS ON CABLE MUST BE LOCATED DOWN.
STEP 2: BEND CABLE DOWN AND UNDER AND SECURE AGAINST ADHESIVE. NOTE DIMENSION SHOWN.
STEP 3: POSITION LOWER HALF OF CONNECTOR ON LOCKING PIN & PRESS TWO HALVES TOGETHER. PULL CABLE THRU SLOT, THEN BEND CABLE TO POSITION CONNECTOR AS SHOWN IN FINAL ASSY.
2. PHYSICAL APPEARANCE OF CONNECTOR MAY BE DIFFERENT, DEPENDING ON VENDOR PART USED. FOR DETAILED DESCRIPTION, REFER TO SPEC. *A-P5-1211206-0-0, LATEST REVISION.

1	LABEL, IDENTIFICATION	1000155	4
2	LABEL, THIS SIDE UP	3011507	3
2	CONN. 40 PIN	1211206	2
A/R	CABLE, FLAT, 40 COND.	9107747-01	1

FIRST USED D/N OPTIDN/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
TU60					
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES. TOLERANCES					
DECIMALS	ANGLES				
.XXX = .005	± 0° 30'				
.XX = .02					
.X = .1					
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY					
MATERIAL					
FINISH					
NEXT HIGHER ASSY.					
D-UA-TU60-0-0					
SCALE 1/1					
SHEET 1 OF 1					
PARTS LIST					
DRN: 11-16-72					
CHKD: 11-21-72					
ENG: 11-21-72					
PROJ ENG: 11-21-72					
PRDD: 11-21-72					
digital EQUIPMENT CORPORATION					
MAINTENANCE DIVISION					
TITLE					
CABLE, JUMPER					
SIZE CODE					
DUA					
NUMBER					
BC05L-0-0					
REV					
M					

THIS IS PRINT SET

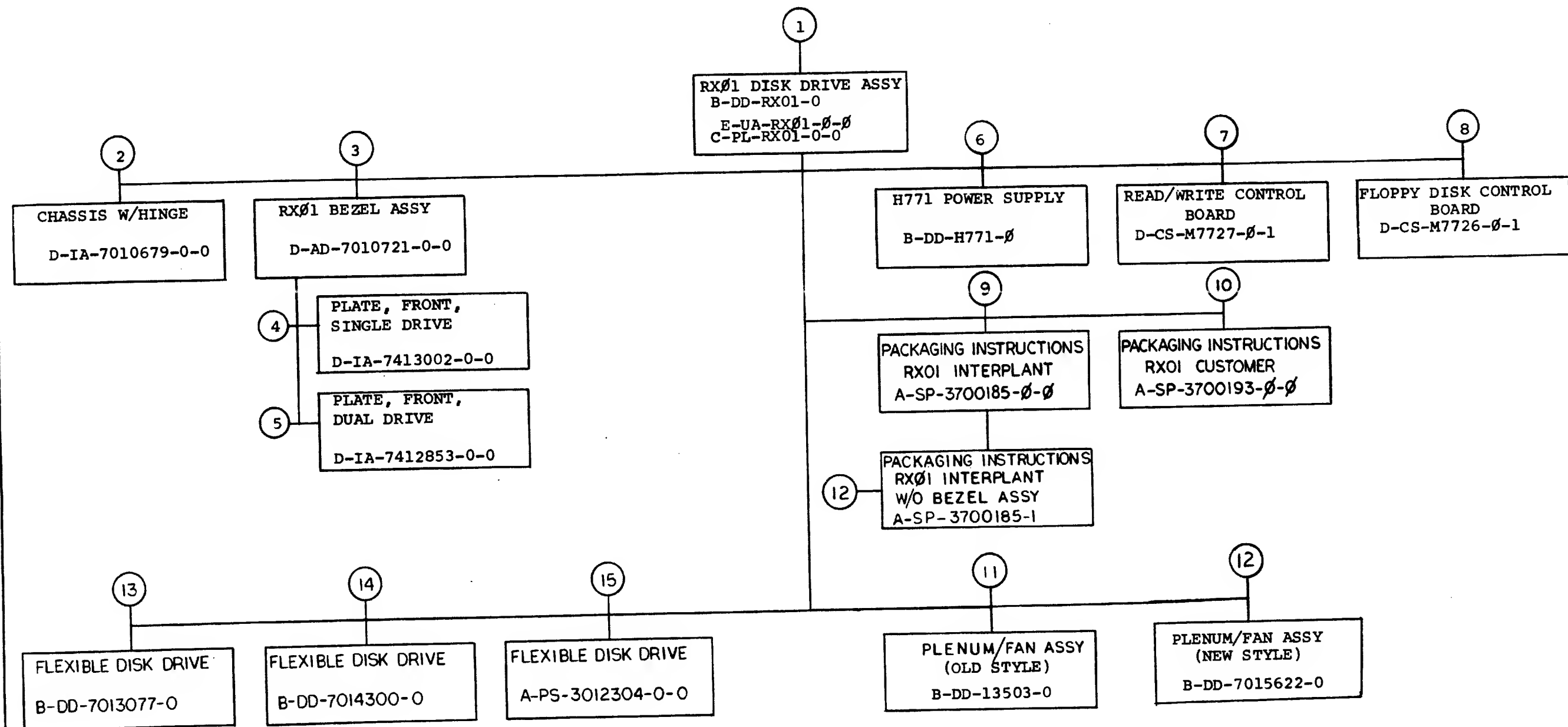
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SEQUENCE

B-DD-RXØ1-Ø
D-CS-M7726-Ø-1
K-SP-RXØ1-Q-2
D-CS-M7727-Ø-1
B-DD-H771-Ø
B-DD-7Ø135Ø3-Ø
B-DD-7015622-Ø

[illegible]DEC 16-13251-1062-1A-R972

mc



TITLE	SHEET	SIZE	CODE	NUMBER	REV
RX01 FLOPPY DISK DRIVE	2 OF 3	B	DD	RX01-0	H

ML

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PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM
REF		X-Y COORDINATE HOLE LOCATION	KCO-M7726-0-4	1
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M7726-0-5	2
REF		MODULE ECO HISTORY	B-MH-M7726-0-6	3
1		ETCHED CIRCUIT BOARD	5011390	4
1	J3	RECEP 36 PIN (RENOEK)	B-MD-5509 071-1	5
1	J2	I.C. SOCKET, 16 PIN GOLD, LOW PROFILE	1211813-02	6
1	R37	RES 10K 1/4W 5% CC	1300479-00	7
3	C 94, C96 - C102	CAP 0.8 μF 35V 10% STANT	1005306-00	8
93	C1 - C93	CAP .01 μF 50V AXIAL CER	1001610-00	9
1	C95	CAP 12 PF 100V 5%	1002087-00	10
3	D1 - D3	DIODE 1N4004	1105796-00	11
1	D4	DIODE 1N746A 3.3V 5%	1104860-00	12
1	R 39	RES 100 1/2W 5% CC	1300228-00	13
3	J4	HEADER, 2PIN (MALE)	1212204-00	14
3	R2, R4, R6, R8, R10 R12, R14, R16	RES 470 1/4W 5% CC	1300316-00	15
8	R27, R29, R31, R47, R52 R43, R41, R45	RES 390 1/4W 5% CC	1300309-00	16
5	R1, R49 - R51, R57	RES 3K 1/4W 5% CC	1300432-00	17
5	R26, R28, R30, R38 R42, R44, R46, R48, R53	RES 180 1/4W 5% CC	1301322-00	18
8	R3, R5, R7, R9, R11 R13, R15, R17	RES 820 1/4W 5% CC	1301775-00	19
1	R35	RES 300 1/4W 5% CC	1301425-00	20
3	R18 - R25	RES 2K 1/4W 5% CC	1302388-00	21
1	R34	RES 261 1/4W 1% MF	1302873-00	22
1	R36	RES 287 1/4W 1% MF	1305124-00	23
1	R40	RES 8.2K 1/4W 5% CC	1303179-00	24
3	R54 - R56	RES 1K 1/4W 5% CC	1300365-00	25
1	Q2	TRANS MXA805	1510705-00	26
1	Q1	TRANS MIXA855	1510706-00	27
5	E19, E20, E21, E29 E40	I.C. 7474	1905547-00	28
3	E9, E57, E59	I.C. 7400	1905575-00	29
2	E93, E60	I.C. 7410	1905576-00	30
1	E75	I.C. 7450	1905580-00	31
1	E55	I.C. 74H20	1905635-00	32
1	E54	I.C. 7402	1909004-00	33
2	E68, E72	I.C. 74H00	1909056-00	34
2	E56, E70	I.C. 74H11	1909267-00	35
5	E50, E69, E70, E79, E82	I.C. 74H74	1909667-00	36
2	E64, E76	I.C. 7404	1909686-00	37
1	E39	I.C. 74154	1909701-00	38
2	E1, E2	I.C. 8881	1909705-00	39
1	E61	I.C. 74H04	1909931-00	40
2	E74, E92	I.C. 7486	1910011-00	41
4	E88, E89, E90, E91	I.C. 74193	1910018-00	42
2	E27, E37	I.C. 8266	1909934-00	43
1	E22	I.C. 7402	1910046-00	44
1	E65	I.C. 7437	1910091-00	45
1	E49	I.C. 74150	1910153-00	46
2	E11, E12	I.C. 7408	1910155-00	47
2	E97, E98	I.C. 7489	1910396-00	48
1	E50	I.C. 74H106	1910408-00	49
3	E80, E81, E87	I.C. 74H103	1910409-00	50
1	E42	I.C. 74123	1910436-00	51

PARTS LIST

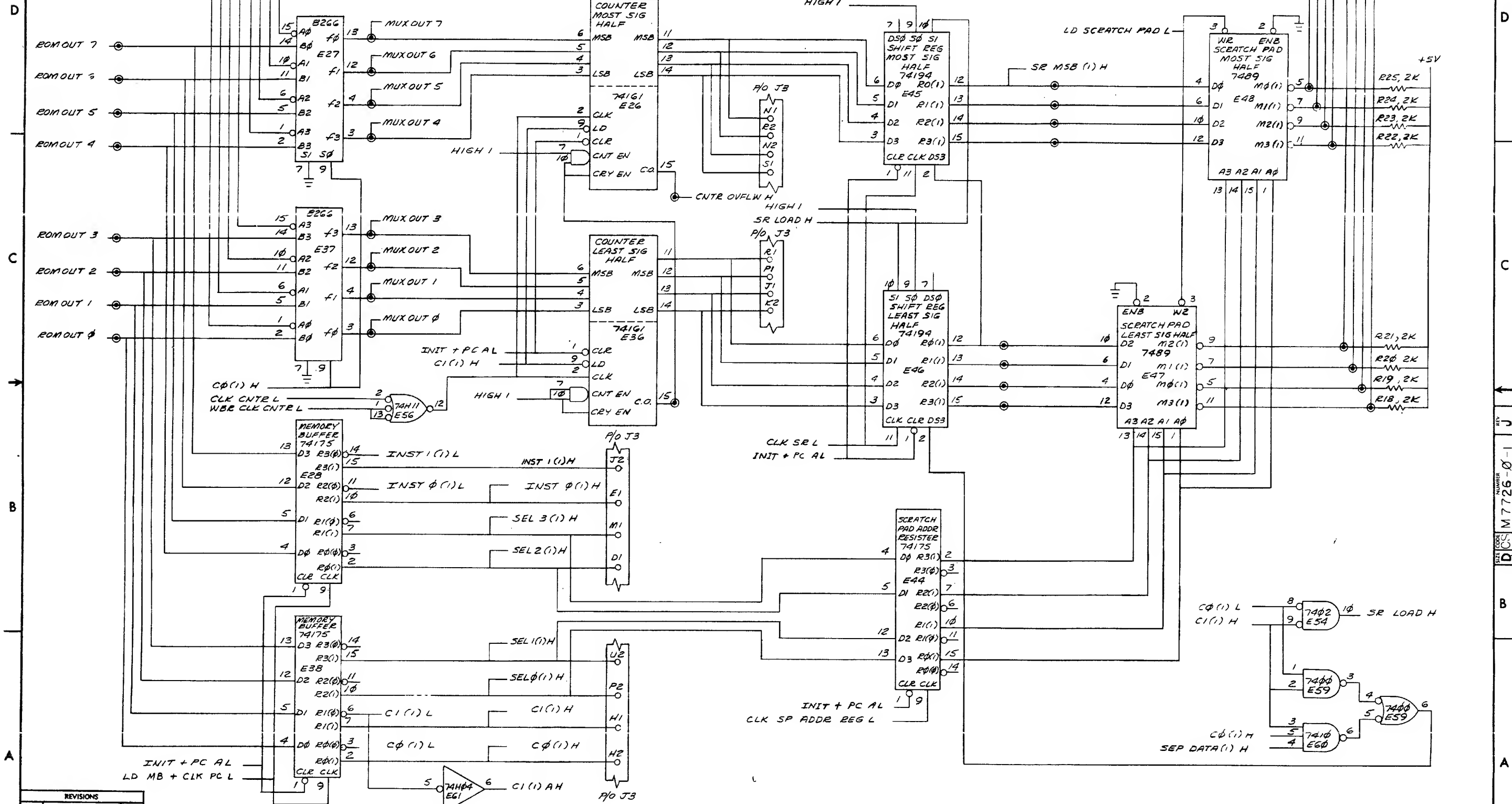
REF DESIGNATION	DESCRIPTION	PART NO.	ITEM
2	E45, E46	I.C. 74194	1910623-00
8	E23, E24, E25, E26 E30, E31, E32, E36	I.C. 74161	1910650-01
3	E84, E85, E86	I.C. 74174	1910652-00
1	E53	I.C. 7427	1910878-00
3	E28, E38, E44	I.C. 74175	1910651-00
2	E10, E66	I.C. 8640	1911469-00
1	E33	I.C. 2102 680 NS	2111318-02
			59
6	E35, E34, E62, E63 E73, E83	SAME IC SPACES	60
1	E67	CRYSTAL OSCILLATOR 20MHZ	1811660-00
4	E41, E71, E93, E52	I.C. 74574	1910544-00
1	E51	I.C. 74H10	1909057-00
1	E77	I.C. 74H40	1903584-00
			65
NR	150 AWG SOLID WIRE (HSL)	9106740-55	66
1	J1	CONN 40PIN RT ANG HDR	1209941-02
1	(J1)	LATCH, LEFT FOR RT ANG HDR	1209941-03
1	(J1)	LATCH, RIGHT FOR RT ANG HDR	1209941-04
1	E13	I.C. 256 X 4 ROM FLD0L	23111A2
1	E3	I.C. 256 X 4 ROM FLD0H	23421A2
1	E14	I.C. 256 X 4 ROM FLD1L	23257A2
1	E4	I.C. 256 X 4 ROM FLD1H	23258A2
1	E15	I.C. 256 X 4 ROM FLD2L	23115A2
1	E5	I.C. 256 X 4 ROM FLD2H	23116A2
1	E16	I.C. 256 X 4 ROM FLD3L	23117A2
1	E6	I.C. 256 X 4 ROM FLD3H	23118A2
1	E17	I.C. 256 X 4 ROM FLD4L	23259A2
1	E7	I.C. 256 X 4 ROM FLD4H	23260A2
1	E18	I.C. 256 X 4 ROM FLD 5L	23121A2
1	E8	I.C. 256 X 4 ROM FLD 5H	23122A2
1	R33	RES 150 1/4W 5% CC	1300250-00

SPARE I.C. GATES			
TYPE	LOCATION	PINS	DESCRIPTION
74H04	E61	1,2	INVERTER
7404	E64	12,13	INVERTER
7404	E76	12,13	INVERTER
7408	E11	1,2,3,8,9,10	2 INPUT AND
74H00	E72	1,2,3,4,5,6,8,9,10	2 INPUT NAND
7437	E66	8,9,10	2 INPUT NAND BUFFER
8881	E2	8,9,10	2 INPUT NAND O.C.
74H10	E51	3,4,5,6	3 INPUT NAND
74H40	E77	1,2,4,5,6	4 INPUT NAND BUFFER
7402	E64	4,5,6	2 INPUT NOR
8640	E66	2,6,7,11,12,13,3,4,5	2 INPUT NOR RCVR
7427	E53	1,2,12,13	3 INPUT NOR
7406	E92	4,5,6	2 INPUT XOR
7406	E74	1,2,3,4,5,6	2 INPUT XOR
74574	E93	1,2,3,4,5,6	DTYPE FLIP FLOP
74H106	E50	1,2,3,4,14,15,16	J K FLIP FLOP
74123	E42	1,2,3,4,13,14,15	ONE SHOT

ALLOWABLE SUBSTITUTIONS					
PREFERRED			REPLACEMENT		
TYPE	ITEM #	P.N.	TYPE	P.N.	
7489	48	1910396-00	3101A	1910653-00	
7489	48	1910396-00	8225	1911162-00	

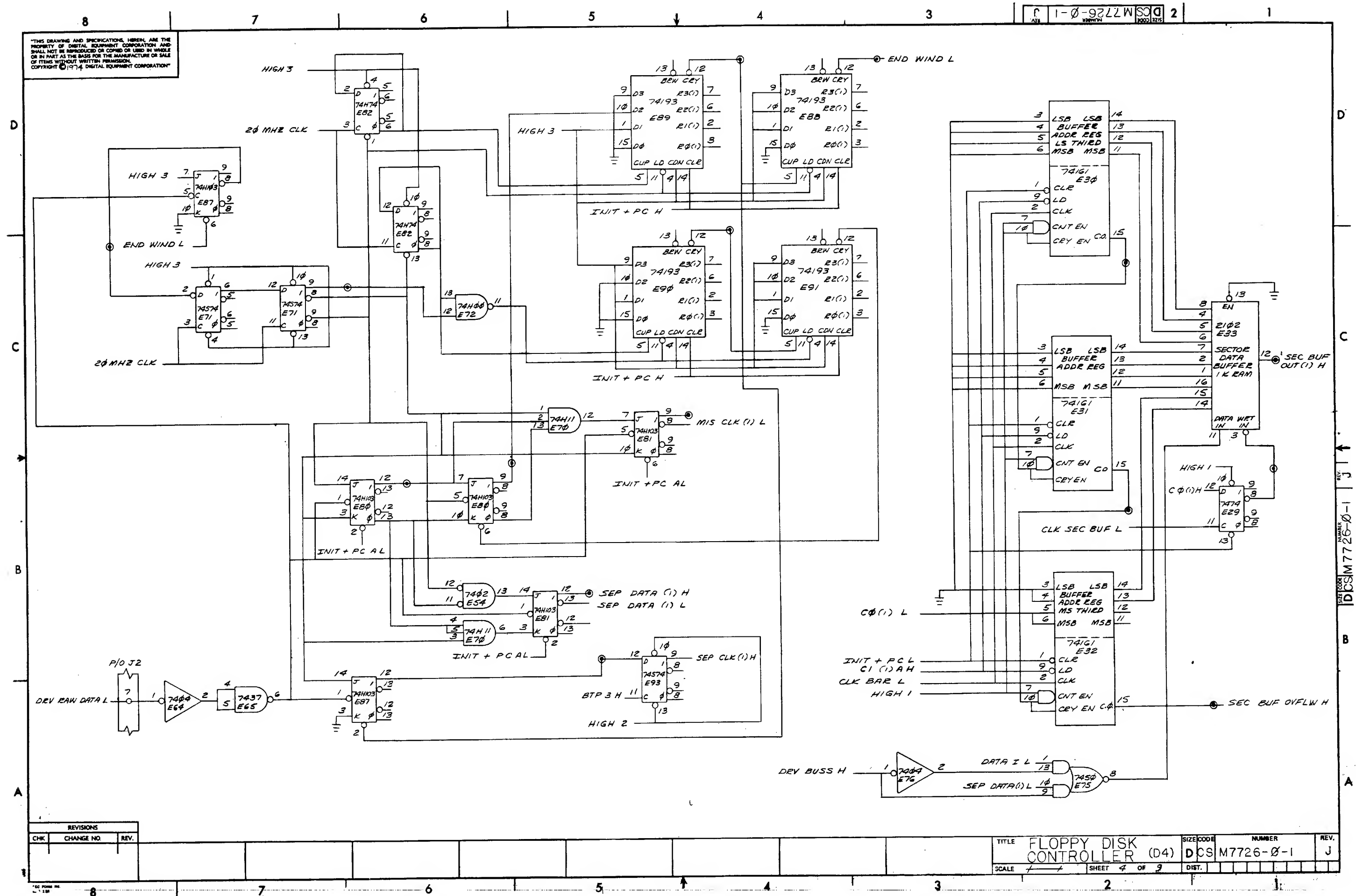
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CHK	CHANGE NO.	REV.

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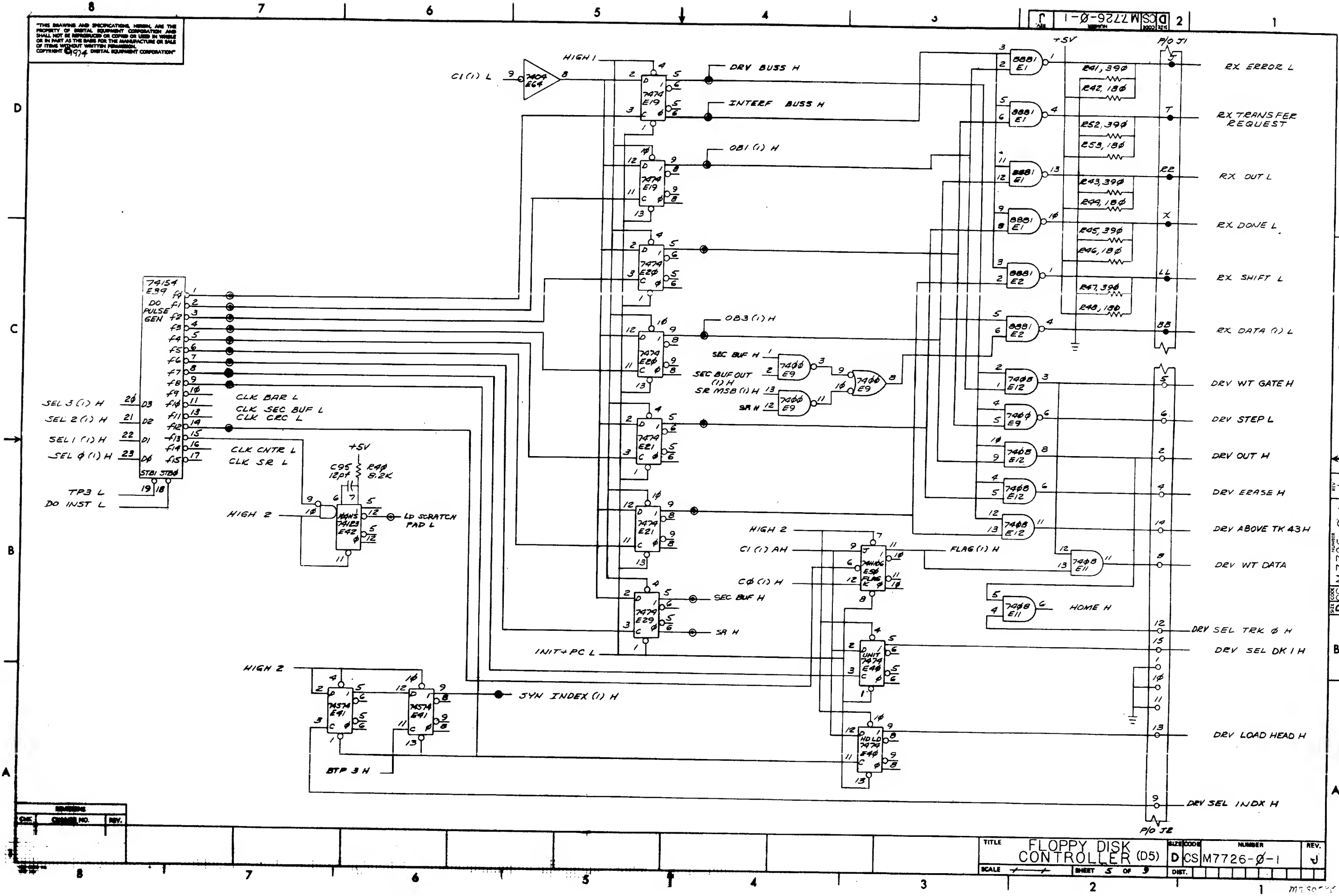


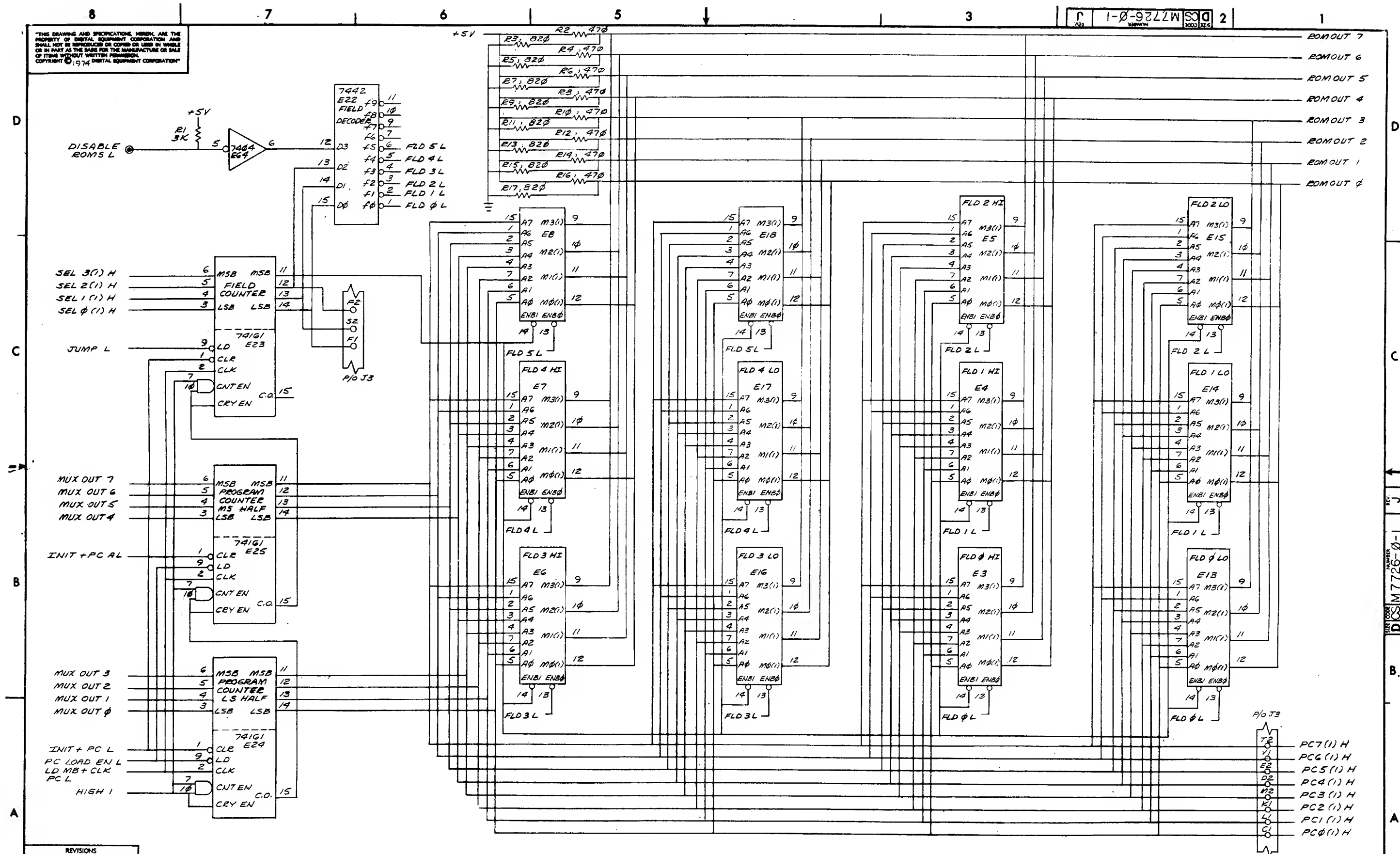
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		FLOPPY DISK CONTROLLER (D3)		SIZE	CODE	NUMBER				REV.
				D	CS	M7726-0-1				J
SCALE		SHEET 3 OF 9		DIST.						



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D

C

B

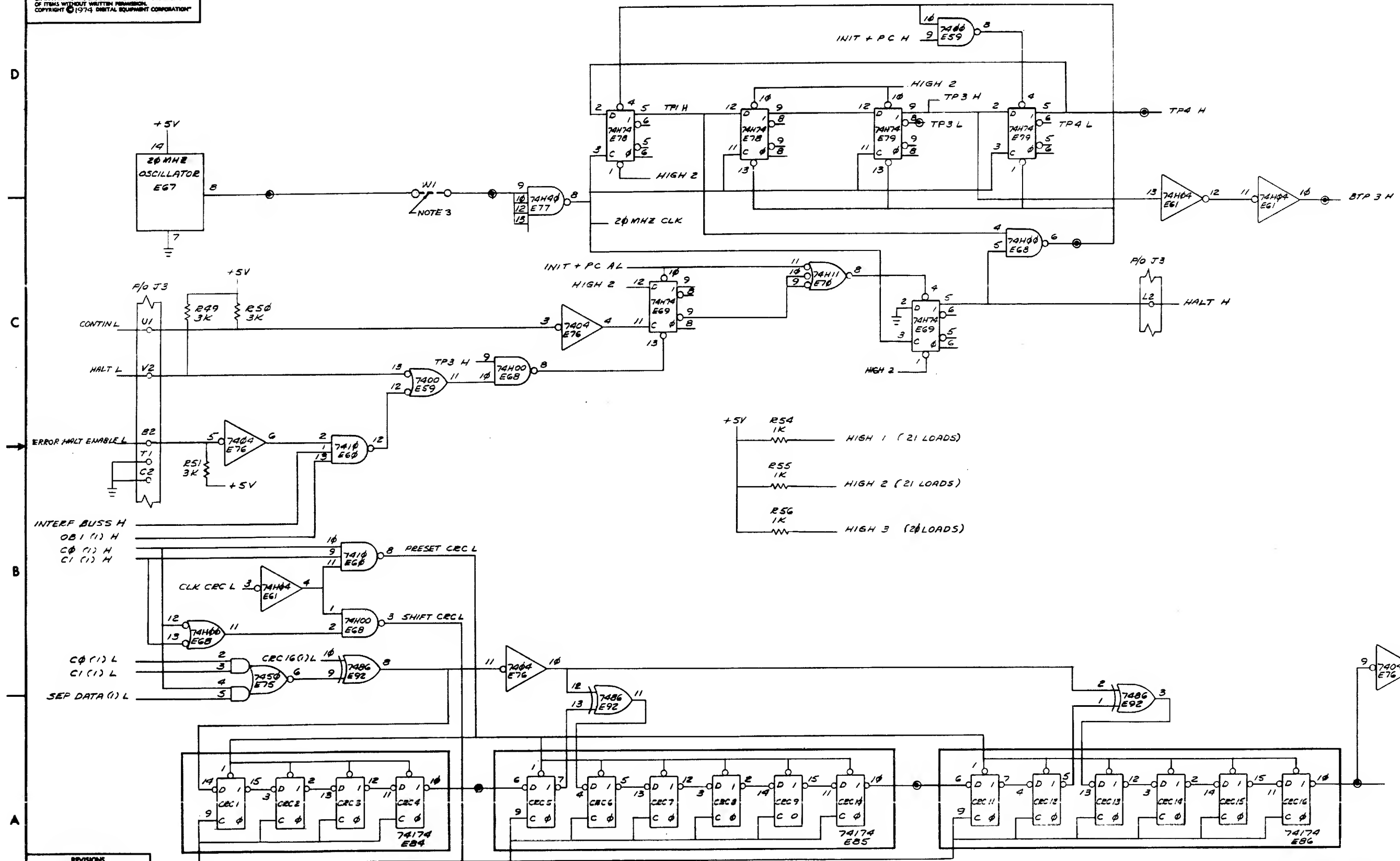
A

D

C

B

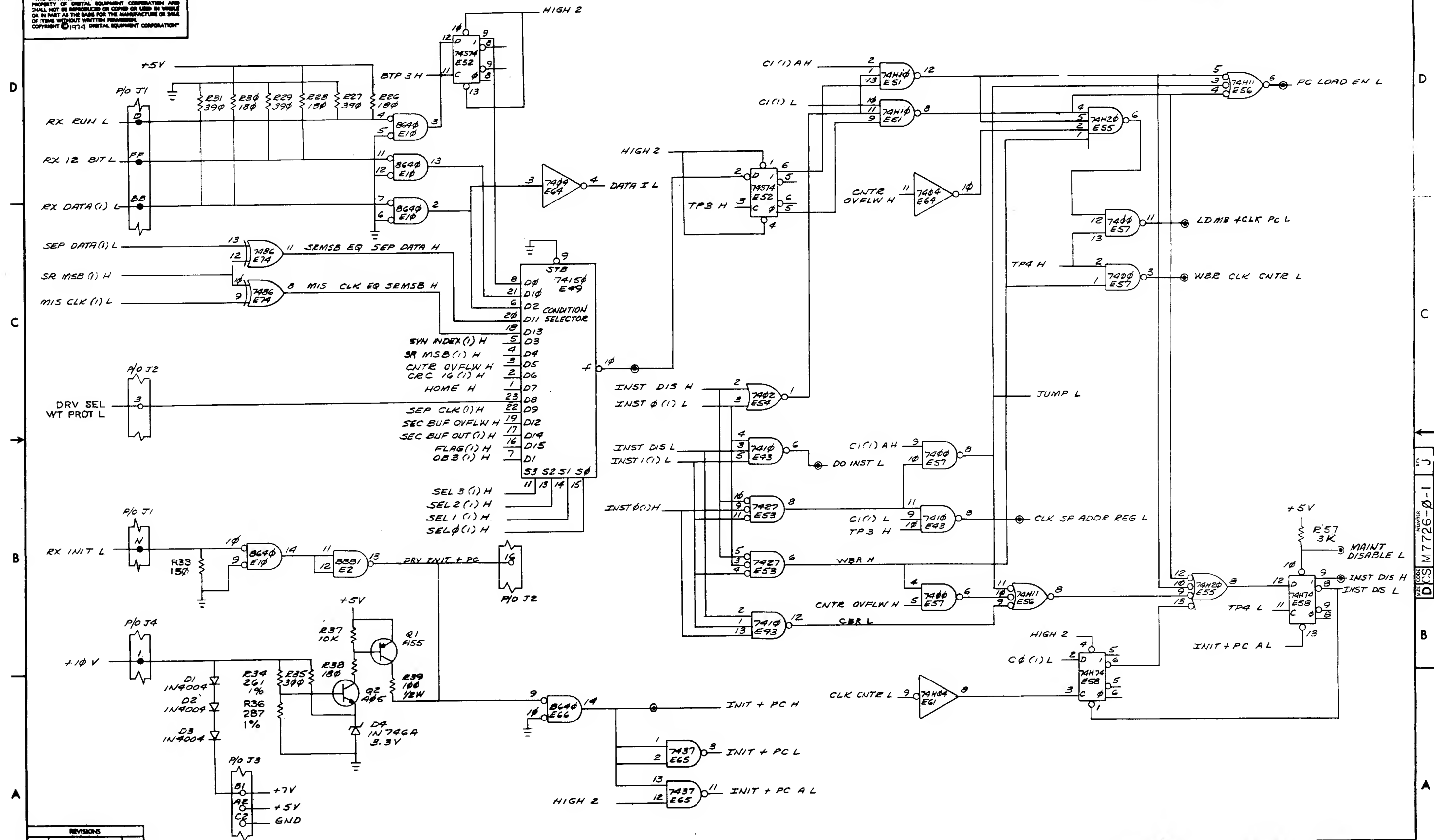
A



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE CODE	NUMBER	REV.
FLOPPY DISK CONTROLLER (D7)		D	CS M7726-0-1	J
SCALE	SHEET 7 OF 9	DIST.		

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REVISIONS		
CHK	CHANGE NO.	REV.

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THIS LIST GIVES THE SOURCE AND DESTINATIONS OF SIGNAL NAMES WITHIN THE W7726 PRINT SET. SIGNAL NAMES THAT DO NOT APPEAR ON THIS LIST ARE PRESENT FOR INFORMATION ONLY. THEY DO NOT INDICATE CONNECTIONS TO OTHER POINTS IN THE PRINT SET.

INTERFACE	REFERS TO SIGNALS ON THE INTERFACE BUSES
DRIVE	REFERS TO SIGNALS ON THE DRIVE BUSES
POWER SUPPLY	REFERS TO VOLTAGES FROM THE POWER SUPPLY
KN11	REFERS TO SIGNALS ON J3 THE MAINTENANCE CONNECTION

SIGNAL NAME	DRIGIR	DESTINATION
BTP J M	D7-CI	D4-A5, D5-A6, D8-D6
CLK SAR L	D5-C7	D4-A3
CLK CRYR L	D5-B7	D3-B7, D8-A4
CLK CMC L	D5-C7	D7-B7
CNTR DVPFR M	D1-C5	D8-D4, D8-C6, D8-B4
CLK SEC BUF L	D5-C7	D4-B2
CLK SR ADDR REG L	D8-B3	D3-A4
CLK SR L	D5-B7	D3-B4
CONTIN L	KR11	D7-C7
CMC16 (1) M	D7-B1	D8-C6
CMC16 (1) L	D7-A1	D7-B7
C1 (1) AM	D3-A6	D4-B3, D5-B4, D8-D4, D8-C4
C1 (1) M	D3-A6	D3-C6, D3-B2, D7-B8
C1 (1) L	D3-A6	D5-D6, D7-B8, D8-D4, D8-B4
CD (1) M	D3-A6	D3-C7, D3-A2, D4-B1, D5-B4, D7-B1
CD (1) L	D3-A6	D3-B2, D4-B3, D7-B8, D8-B3
DATA I L	D8-D5	D4-A2
DISABLE HOME L	TEST PAD	D6-DW
DO INST L	D8-B4	D5-B8
DNV NUSS M	D5-D4	D4-A4
DRV ERASE M	D5-B1	DRIVE
DRV OUT M	D5-C1	DRIVE
DRV LOAD HEAD M	D5-A1	DRIVE
DRV STEP L	D5-C1	DRIVE
DRV INIT + PC	D8-B6	DRIVE
DRV ABOVE TK 43 M	D5-B1	DRIVE
DRV RAN DATA L	DRIVE	D4-A8
DRV SEL DK 1 M	D5-B1	DRIVE
DRV SEL INDX M	DRIVE	D5-A1
DRV SEL TRK D R	DRIVE	D5-B1
DRV WT DATA	D5-B1	DRIVE
DRV WT GATE M	D5-C1	DRIVE
DRV SEL WT PROT L	DRIVE	D8-C8
ERR WIRD L	D4-D3	D4-D8
ERROR NLT ENABLE L	KW11	D7-C7

FLAG (I) M	D5-B3	D8-B6
FLD 0 L	D4-D6	D6-A3, D6-A2
FLD 1 L	D4-D6	D6-B3, D6-B2
FLD 2 L	D4-D6	D6-C3, D6-C2
FLD 3 L	D4-D6	D6-A6, D6-A4
FLD 4 L	D4-D6	D6-B6, D6-B4
FLD 5 L	D4-D6	D6-C6, D6-C4
HALT M	D7-C3	KN11
HALT L	KN11	D7-C7
HIGH 1	D7-C4	D3-D6, D3-D4, D3-C6, D3-C4, D4-A1
HIGH 2	D7-B4	D4-B1, D5-D5, D6-A8
		D4-A5, D5-S7, D5-A7, D5-B4, D7-D5
		D7-D4, D7-C4, D7-C3, D8-D5, D8-B1
		D8-A5
HIGH 3	D7-B4	D4-D8, D4-C8, D4-D7, D4-A7, D4-B6
HOME M	D5-B2	D8-C6
INIT +PC A L	D8-A4	D3-C6, D3-B4, D3-A4, D3-A7, D4-B6
IRBIT + PC M	D8-AA	D4-B3, D4-B8, D7-C3, D8-B2
IRBIT + PC L	D8-AA	D4-D5, D4-C5, D7-B4
INST 0 (I) M	D3-B6	D4-B3, D5-B5, D6-A8
INST D (I) L	D3-B6	KN11, D8-B5
INST I (I) M	D3-B6	KN11
INST I (I) L	D3-B6	D8-B5
INST DIS M	D8-B1	D8-C5
INST DIS L	D8-R1	D8-R5
INTERF BUSB R	D5-D4	D7-R8
JUMP L	D8-C3	D6-C8
LD MM + CLK PC L	D8-C1	D6-AH, D3-A8
LD SCRATCH PAD L	D5-M6	D3-D3
MAINT DIS L	TEST PAD	D8-B1
MIS CLK (I) L	D4-C4	D8-C8
MUX OUT 0	D3-C7	D6-A8
MUX OUT 1	D3-C7	D6-A8
MUX OUT 2	D3-C7	D6-A8
MUX OUT 3	D3-C7	D6-B8
RJS OUT 4	D3-C7	D6-B8
MUX OUT 5	D3-D7	D6-B8
MUX OUT 6	D3-D7	D6-R8
MUX OUT 7	D3-D7	D6-B8

DB1 (1) M	D5-C4	D7-B8
DS3 (1) M	D5-C4	D8-B6
PC 0 (1) H	D6-A1	KM11
PC 1 (1) H	D6-A1	KM11
PC 2 (1) H	D6-A1	KM11
PC 3 (1) H	D6-A1	KM11
PC 4 (1) H	D6-A1	KM11
PC 5 (1) H	D6-A1	KM11
PC 6 (1) H	D6-A1	KM11
PC 7 (1) H	D6-A1	KM11
RC LOAD EN L	D8-D1	D6-A8
RDM OUT 0	D6-D1	D3-C8
RDM OUT 1	D6-D1	D3-C8
RDM OUT 2	D6-D1	D3-C8
RDM OUT 3	D6-D1	D3-C8
RDM OUT 4	D6-D1	D3-C8
RDM OUT 5	D6-D1	D3-D8
RDM OUT 6	D6-D1	D3-D8
RDM OUT 7	D6-D1	D3-D8
RK DATA (1) L	D5-C1, INTERFACE	INTERFACE, D8-D8
RX DONE L	D5-D1	INTERFACE
RK ERRDR L	D5-D1	INTERFACE
RX INIT L	INTERFACE	D8-D8
RX INT L	D5-D1	INTERFACE
RK RUN L	INTERFACE	D8-D8
RX SHIFT L	D5-C1	INTERFACE
RX TRANSFER REQUEST	D5-D1	INTERFACE
RK 12 HIT L	INTERFACE	D8-D8
SFC BUF OVFLW M	D4-A1	D8-C6
SFC HUF OUT (1) M	D4-C1	D8-C4, D8-B6
SFC HUF M	D5-B4	D5-C4
SFL 0 (1) M	D3-A6	D5-C4, D6-C8, D8-B6
SEL 1 (1) M	D3-A6	D5-C8, D6-C8, D8-B6
SFL 2 (1) M	D3-B1	D5-C4, D6-C8, D8-B6
SEL 3 (1) M	D3-M6	D5-C4, D6-C8, D8-B6
SEN CLK (1) M	D4-H4	D8-C6
SEP DATA (1) H	D4-H5	D3-A2
SEP DATA (1) L	D4-B5	D4-A2, D7-A8, D8-B6
SH H	D5-B4	D5-C4
SR LOAD M	D3-B1	D1-C4
SR MSB (1) M	D3-D3	D5-C4, D8-C8, D8-B6
STN INDEX (1) M	D5-A5	D8-C6

TP3 H	D7-D3	D7-C4, D8-B4, D8-C5
TP3 L	D7-D3	D5-B8
TR4 H	D7-D2	D8-C3
TP4 L	D7-D3	D8-B2
WNR CLK CNTN L	D8-C2	D3-B7
20 MHZ CLK	D7-C3	D4-C8, D4-D7
GND	POWER SUPPLY	D1-A4
+5V	POWER SUPPLY	D1-A4, D8-A7
+7V	D8-A7	KM11
+10V	POWER SUPPLY	D8-B8


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FLOPPY DISK CONTROLLER
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	SIZE	CODE
	D	CS

NUMBER	M7726-Ø-1
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RE	J
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SCALE  SHEET 9

SHEET 9 OF 9

D11

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FIRST USED ON OPTION MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
RXØ1					
PARTS LIST					
DRN.	DATE	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS			
CHK'D	DATE	TITLE			
ENG.	DATE	FLOPPY CONTROLLER FIRMWARE			
PRO. ENG.	DATE				
PROD.	DATE				
NEXT HIGHER ASSEMBLY					
SCALE		SIZE	CODE	NUMBER	REV.
		K	SP	RXØ1-Ø-2	
SHEET 1 OF 1		DIST.			

```
1
2
3      /RX01 FLOPPY CONTROLLER FIRMWARE
4
5      /THIS SYMBOL TABLE REPLACES THE NORMAL PAL SYMBOL TABLE AND DEFINES
6      /THE INSTRUCTIONS POSSIBLE BY THE RX01 CONTROLLER
7
8
9
10
11
12      /OO INSTRUCTIONS
13
14      0002      SET=2
15      0000      CLR=0
16      0002      ONE=2
17      0000      ZERO=0
18
19      0000      IOB0=0      /INTERFACE=DISK BUSS OUTPUT BUFFER
20      0004      IOB1=4
21      0010      IOB2=10
22      0014      IOB3=14
23      0020      IOB4=20
24      0024      IOB5=24
25      0030      IOB6=30
26
27      0000      INTERF=CLR IOB0      /IOB0 SELECTS EITHER INTERFACE OR DISK BUSS, CLR= INTERFACE
28      0002      DISK=SET IOB0      /SET=DISK
29
30      /INTERFACE BUFFER DEFINITIONS
31      0004      ERR=IOB1      /SET TO INDICATE THAT AN RX01 ERROR HAS OCCURED
32      0010      XREQ=IOB2      /SET TO REQUEST AN RX01 WORD TRANSFER
33      0014      IOOUT=IOB3      /DIRECTION FOR DATA LINE, SET=TO INTERFACE
34      0020      DONE=IOB4      /SET TO INDICATE RX01 READINESS TO ACCEPT A COMMAND
35      0024      SHIFT=IOB5      /SHIFT FOR DATA LINE
36      0030      SECOAT=IOB6      /SELECTS SOURCE FOR DATA OUT OF CONTROLLER ON DATA LINE
37      /SET=SECTOR BUFFER CLR=SHIFT REGISTER MOST SIG BIT
38
39      /DISK BUFFER DEFINITIONS
40      0004      WGate=IOB1      /WRITE CURRENT ENABLE WHEN SET
41      0010      STPHD=IOB2      /HEAD STEP, TWO PULSES REQUIRED FOR EACH TRACK
42      0014      HDOUT=IOB3      /DIRECTION OF HEAD MOTION
43      0020      EGATE=IOB4      /ERASE CURRENT ENABLE
44      0024      LWCUR=IOB5      /SPECIFIES WRITE CURRENT LEVEL
45
46      0034      UNIT=34      /SELECTS ONE OF TWO DRIVES, UNIT (ZERO)(ONE)
47
48      0040      UNHD=40      /DEACTIVATES HEAD LOAD SOLENOID OF SELECTED DRIVE
49      0042      LHD=42      /ACTIVATES HEAD LOAD SOLENOID OF SELECTED DRIVE
50
51      0044      BAR=44      /SECTOR BUFFER ADDRESS REGISTER CONTROL
52      0001      LONG=1      /FORMAT: CLR BAR (SHORT)(LONG)
53      0000      SHORT=0      /SHORT PRESETS FOR COUNT OF 1024
54      0002      INCR=2      /LONG PRESETS FOR COUNT OF 4096
55      /FORMAT: INCR BAR INCREMENT THE BUFFER ADDRESS REG.
```

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56
57      0050      WRTBUF=50      /SECTOR BUFFER WRITE CLOCK
58      0003      START=3      /FORMAT: (START)(FIN) WRTBUF
59      0000      FIN=0      /A 750NS MINIMUM PULSE IS REQUIRED
60
61      /CRC REGISTER CONTROL
62      0054      CRC=54      /FORMAT: CRC (ONE)(ZERO) SPECIFIES DATA TO
63      /BE JAMMED INTO CRC GENERATOR/CHECKER
64      0057      PRECRC=57      /PRESETS CRC REG TO ALL ONES
65      0055      OATCRC=55      /SHIFTS SEPERATED DATA INTO CRC CIRCUIT
66
67      /GENERAL PURPOSE FLAG CONTROL
68      0060      FLAG=60      /FORMAT: FLAG (ON)(OFF)(TOG)
69      0002      ON=2      /SET FLAG
70      0001      OFF=1      /CLR FLAG
71      0003      TOG=3      /TOGGLE FLAG
72
73      0064      LSP=64      /LOAD OPEN SCRATCHPAD REG WITH CONTENTS OF SHIFT REG
74
75      0070      LCT=70      /LOAD COUNTER WITH CONTENTS OF NEXT ROM LOCATION
76      0071      ESP=71      /LOAD COUNTER WITH CONTENTS OF OPEN SCRATCHPAD
77      0073      ICT=73      /INCREMENT COUNTER
78
79      /SHIFT REGISTER CONTROL
80      0074      ROTATE=74      /FORMAT: ROTATE(ONE)(ZERO)
81      /SHIFTS SHIFT REG TOWARDS MOST SIGNIFICANT BIT
82      /WHILE INSERTING A ONE OR ZERO INTO THE LEAST
83      /SIGNIFICANT BIT
84      0075      LSR=75      /LOAD SHIFT REGISTER WITH CONTENTS OF COUNTER
85      0077      DATSR=77      /SHIFT REG TOWARDS MSB WHILE INSERTING SEPERATED
86      /DATA INTO LSR
```

```
87
88
89          /BRANCH INSTRUCTIONS AND CONDITIONS
90
91
92          0100    BR=100          /FORMAT: BR COND (T)(F)(ONE)(ZERO)
93          /IF CONDITION IS MET, A BRANCH IS MADE WITHIN
94          /THE CURRENT FIELD USING THE CONTENTS OF THE
95          /NEXT ROM LOCATION AS THE BRANCH ADDRESS
96          /IF THE CONDITION IS NOT MET, THE NEXT ROM LOCATION
97          /IS IGNORED AND THE FOLLOWING INSTRUCTION IS EXECUTED
98          0300    WBR=300        /FORMAT: WBR COND (T)(ONE)
99          /THE COUNTER IS INCREMENTED WITH EVERY EXECUTION OF
100         /THIS INSTRUCTION, THE WBR IS REPEATEDLY
101         /EXECUTED UNTILL EITHER THE COUNTER OVERFLOWS OR
102         /THE CONDITION IS MET, IF THE CONDITION IS MET
103         /THE BRANCH IS MADE, IF THE COUNTER OVERFLOWS
104         /THE BRANCH ADDRESS IS IGNORED AND THE NEXT INSTRUCTION
105         /IS EXECUTED
106         0000    F=ZERO          /REQUIRES THE CONDITION TO BE FALSE
107         0002    T=ONE           /REQUIRES THE CONDITION TO BE TRUE
108         0001    IND=1           /IF APPENDED TO THE JUMP, OR OR WDR INSTRUCTION,
109         /CAUSES THE BRANCH ADDRESS TO BE TAKEN FROM THE
110         /OPEN SCRATCHPAD RATHER THAN FROM THE NEXT ROM LOCATION
111
112         0000    RUN=0           /WHEN ASSERTED INDICATES THAT THE INTERFACE HAS
113         /SERVICED A TRANSFER REQUEST, OR THAT A COMMAND
114         /IS PENDING
115         0004    IOB30T=4        /INTERF/DISK OUTPUT BUFFER BIT 3
116         0010    DATAIN=10      /BIDIRECTIONAL DATA LINE BETWEEN INTERFACE AND CONTROLLER
117         0014    INDX=14         /DRIVE INDEX LATCH
118         0020    SR7=20          /SHIFT REGISTER MOST SIGNIFICANT BIT
119         0024    COFL=24         /OVERFLOW (ALL ONES) OF THE COUNTER
120         0030    CRC16=30        /BIT 16 OF CRC GENERATOR/CHECKER
121         0034    HOME=34        /TRACK ZERO OF SELECTED DRIVE ANDED WITH HEAD
122         /DIRECTION BEING OUT
123         0040    WRTE=40         /WRITE ENABLED STATUS OF THE SELECTED DRIVE
124         0044    SEPCLK=44       /SEPERATED CLOCK FROM DISK DATA
125         0050    XIIBIT=50      /ASSERTED IF INTERFACE TRANSFERS ARE TO BE AS
126         /12 BIT WORDS RATHER THAN 8 BIT BYTES
127         0054    DEQSR7=54      /SEPERATED DATA EQUAL TO SHIFT REG BIT 7
128         0060    BAROFL=60      /OVERFLOW CONDITION (ALL ONES) OF THE SECTOR BUFFER
129         /ADDRESS REGISTER
130         0064    MCEQSR=64      /MISSING CLOCK EQUAL TO SHIFT REG BIT 7
131         0070    BDATA0=70      /OUTPUT OF SECTOR BUFFER
132         0074    FLAG0=74       /STATE OF GENERAL PURPOSE FLAG
```

```
133
134          /SCRATCHPAD REGISTER SELECTION
135
136          0200    OPEN=200       /FORMAT: OPEN X WHERE X IS ONE OF THE SCRATCHPAD REG
137          /THIS INSTRUCTION MAKES THE NAMED SCRATCHPAD
138          /ACCESSABLE VIA THE LSP AND ESP COMMANDS
139
140          0000    R0=0
141          0004    R1=4
142          0010    R2=10
143          0014    R3=14
144          0020    R4=20
145          0024    R5=24
146          0030    R6=30
147          0034    R7=34
148          0040    R8=40
149          0044    R9=44
150          0050    R10=50
151          0054    R11=54
152          0060    R12=60
153          0064    R13=64
154          0070    R14=70
155          0074    R15=74
156
157          /DEFINITION OF SCRATCHPADS BY PNEUMONICS
158          0000    CURTK0=R0      /CURRENT TRACK ADDRESS OF DRIVE 0
159          0004    CURTK1=R1      /CURRENT TRACK ADDRESS OF DRIVE 1
160          0010    ERREG=R2      /DEFINITIVE ERROR CODE IF ANY
161          0014    STAT=R3       /STATUS WORD OF RX01
162          0020    TARTRK=R4     /TARGET TRACK OF CURRENT DISK ACCESS
163          0024    TARSEC=R5     /TARGET SECTOR OF CURRENT DISK ACCESS
164          0030    TEMP0=R6      /TEMPORARY STORAGE
165          0034    TEMPB=R7      /TEMPORARY STORAGE
166          0040    TEMPC=R8      /TEMPORARY STORAGE
167          0044    TEMPD=R9      /BIT 7 IS UNIT SELECT BIT, 0 MEANS UNIT 1
168          0050    TEMPE=R10     /BIT 7 IS HEAD LOADED BIT, 1 MEANS HEAD LOADED
169          0054    TEMPF=R11     /TEMPORARY STORAGE
170          0060    TEMPG=R12     /TEMPORARY STORAGE
171          0064    RTNB=R13      /RETURN ADDRESS FOR 3RD LEVEL NESTED SUBROUTINES
172          0070    RTNA=R14      /RETURN ADDRESS FOR 2ND LEVEL NESTED SUBROUTINES
173          0074    RTN=R15       /RETURN ADDRESS FOR 1ST LEVEL SUBROUTINES
174
```



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175          /JUMP INSTRUCTION AND JUMP FIELD DEFINITIONS
176
177          0202      JUMP=202      /FORMAT: JUMP FX (IND)
178                                     /CAUSES A BRANCH TO ONE OF SIX ROM FIELDS (0-5)
179                                     /SPECIFIED BY X. THE BRANCH ADDRESS IS TAKEN FROM
180                                     /THE ROM LOCATION FOLLOWING THE JUMP INSTRUCTION.
181                                     /IF IND IS APPENDED, THE BRANCH ADDRESS
182                                     /IS TAKEN FROM THE OPEN SCRATCH PAD
183
184          0000      F0=0
185          0004      F1=4
186          0010      F2=10
187          0014      F3=14
188          0020      F4=20
189          0024      F5=24
  
```

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190
191
192
193
194
195
196
197
198          /TABLE OF DEFINITIVE ERROR CODES
199
200          0010      KXDV3=10      /DRIVE 0 FAILED TO SEE HOME ON INITIALIZE
201          0020      KXDV1=20      /DRIVE 1 FAILED TO SEE HOME ON INITIALIZE, DOES NOT CAUSE ERROR
202          0030      KWRONG=30      /FOUND HOME WHEN STEPPING IN 10 TRACKS FOR INIT
203          0040      KERRK=40      /TRIED TO ACCESS A TRACK GREATER THAN 76
204          0050      KHOMERR=50      /HOME WAS FOUND BEFORE DESIRED TRACK WAS REACHED
205          0060      KSELER=60      /SELF DIAGNOSTIC ERR
206          0070      KXHDR=70      /DESIRED SECTOR COULD NOT BE FOUND AFTER LOOKING
207                                     /AT 52 HEADERS
208          0100      KXPROT=100      /WRITE FUNCTION ATTEMPTED ON A WRITE PROTECTED DISK
209          0110      KTIMER=110      /MORE THAN 40 MICHROSECONDS AND NO SEPCLOCK SEEN
210          0120      KXPRAM=120      /A PREAMBLE COULD NOT BE FOUND
211          0130      KXIDAM=130      /PREAMBLE FOUND BUT NO ID MARK FOUND WITHIN ALLOWABLE TIME
212          0140      KHCRCE=140      /CRC ERROR ON WHAT APPEARED TO BE A HEADER, ERROR IS NOT ASSERTED
213          0150      KTKSKER=150      /THE TRACK ADDRESS OF A GOOD HEADER DOES NOT COMPARE
214                                     /WITH THE DESIRED TRACK
215          0160      KXSTRYS=160      /TOO MANY TRIES FOR AN IDAM
216          0170      KXODAM=170      /DATA AM NOT FOUND IN ALLOTTED TIME
217          0200      KDCRCER=200      /CRC ERROR ON READING THE SECTOR FROM THE DISK
218          0210      KPARER=210      /PARITY ERROR ON SOME WORD FROM THE INTERFACE
219
  
```

```
220 /ROUTINE: INITIALIZE] IF A HOST PROCESSOR INITIALIZE OR AN
221 /RX01 POWER LOW IS DETECTED, THE PC IS CLEARED AND THE RX01 TIMING
222 /STOPS. UPON THE NEGATION OF INITIALIZE, TIMING RESUMES AND A SELF TEST OF
223 /INTERNAL DATA PATHS IS MADE. IF AN ERROR OCCURS HERE, ERROR AND
224 /DONE ARE SET, BUT ERREG IS NOT ALTERED. THEN IF NO ERROR HAS OCCURRED AN ATTEMPT
225 /IS MADE TO RECALIBRATE DRIVE 1 THEN DRIVE 0. IF DRIVE 0 FAILS TO RECALIBRATE,
226 /THE ERROR CODE IS LOADED INTO ERREG AND ERROR IS SET. IF DRIVE
227 /0 RECALIBRATES AND IS READY (DISK LOADED) SECTOR ONE OF TRACK ONE
228 /IS READ INTO THE SECTOR BUFFER. IT IS POSSIBLE FOR A READ ERROR
229 /TO OCCUR WHILE READING THIS SECTOR.
230
231
232 0000 *0000
233 DECIMAL
234
235 0000 0210 OPEN ERREG /CLEAR ERROR REGISTER
236 0001 0064 LSP
237
238 0002 0232 JUMP F4 /GO OO THE INITIALIZE DIAGNOSTIC ROUTINE
239 0003 2352 TEST
240
241 0004 0070 TSTRTN, LCT /RETURN FROM SUCCESSFUL DIAGNOSTIC ROUTINE
242 OCTAL
243 0005 0004 4
244 DECIMAL
245 0006 0075 LSR /SET THE INIT DONE BIT OF STAT
246 0007 0214 OPEN STAT
247 0010 0064 LSP
248
249 0011 0070 LCT /SET UP SOME SCRATCHPAD REGISTERS
250 0012 0377 -1
251 0013 0075 LSR
252 0014 0244 OPEN TEMPO /UNIT 0 TO SOFT UNIT BIT
253 0015 0064 LSP
254 0016 0200 OPEN CURTK0 /NEG ZERO TO BOTH CURRENT TRACK ADDRESSES
255 0017 0064 LSP
256 0020 0204 OPEN CURTK1
257 0021 0064 LSP
258
259 0022 0074 ROTATE ZERO /NEG ONE TO TARGET SECTOR
260 0023 0224 OPEN TARSEC
261 0024 0064 LSP
262 0025 0220 OPEN TARTRK /NEG ONE TO TARGET TRACK FOR INITIALIZE BOOTSTRAP
263 0026 0064 LSP
264
265 0027 0002 DISK /SELECT DISK RUSS
266
267 0030 0070 LCT /CALL SUBROUTINE TO LOAD HEAD AND WAIT 25 MS
268 0031 0034 RECAL1 /TO ALLOW POWER UP DRIVE SETTLE TIME
269 0032 0222 JUMP F4
270 0033 2145 DLY25
271
272 0034 0036 RECAL1, UNIT ONE /SELECT UNIT ONE FOR RECALIBRATE
273
274 0035 0014 RECAL0, CLR HDOUT /STEP HEAD IN 14 TRACKS TO ASSURE IT IS NOT BEHIND TRACK 0
```

```
275 0036 0070 LCT
276 0037 0365 -10-1
277 0040 0075 LSR
278 0041 0070 LCT
279 0042 0045 IN10
280 0043 0222 JUMP F4
281 0044 2100 STEPH0
282
283 0045 0226 IN10, JUMP F5 /ERROR. HOME WAS SEEN WHILE STEPPING IN.
284 0046 2621 WRONG
285
286 0047 0016 SET HDOUT /STEP OUT AS MANY AS 80 TRACKS IN SEARCH OF HOME
287 0050 0070 LCT
288 0051 0257 -80-1
289 0052 0075 LSR
290 0053 0070 LCT
291 0054 0060 RCALOK
292 0055 0040 UNHD
293 0056 0222 JUMP F4
294 0057 2100 STEPH0
295
296 0060 0202 RCALOK, JUMP F0 /HOME WAS FOUND OK
297 0061 0075 WHCHOR
298
299 0062 0174 BR FLAG0 F /IF FLAG=0 RECALIBRATE WAS ON DRIVE 1
300 0063 0070 NXDRV1
301
302 0064 0070 NXORV0, LCT /RECALIBRATE FAILURE WAS ON DRV 0
303 0065 0010 KNXOV0
304 0066 0226 JUMP F5
305 0067 2610 GOERON
306
307 0070 0070 NXORV1, LCT /RECAL FAILURE WAS ON DRV 1, LOG ERROR
308 0071 0020 KNXOV1 /AND CONTINUE RECALIBRATION
309 0072 0075 LSR
310 0073 0210 OPEN ERREG
311 0074 0064 LSP
312
313 0075 0176 WHCHOR, BR FLAG0 T /IF FLAG=1 BOTH DRIVES HAVE BEEN RECALIBRATED
314 0076 0372 PDNRCL
315
316 0077 0062 FLAG ON /SET FLAG TO INDICATE DRV 0 IS BEING RECALIBRATED
317
318 0100 0034 UNIT ZERO
319
320 0101 0202 JUMP F0 /GO BACK AND RECALIBRATE ORV0
321 0102 0035 RECAL0
```

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322
323
324
325
326
327
328
329
330
331
332
333
334
335 0103 0075 FINDTR, LSR /SAVE THE RETURN ADDRESS
336 0104 0274 OPEN RTN
337 0105 0064 LSP
338
339 0106 0070 LCT /CLEAR THE ERROR REGISTER
340 0107 0000 0
341 0110 0075 LSR
342 0111 0210 OPEN ERREG
343 0112 0064 LSP
344
345 0113 0244 OPEN TEMPD /SOFT UNIT BIT TO SR
346 0114 0071 ESP
347 0115 0075 LSR
348
349 0116 0122 BR SR7 ONE /IF SR=1 DRIVE 0 IS CURRENTLY SELECTED
350 0117 0127 UZERO
351
352 0120 0174 UONE, BR FLAG0 ZERO /IF FLAG=0 DRIVE 1 IS DESIRED AND ALREADY SELECTED
353 0121 0141 USAME
354
355 0122 0034 UNIT ZERO /DRIVE 0 IS DESIRED AND DRIVE1 WAS SELECTED, SELECT 0
356
357 0123 0070 LCT /SET UP SOFT UNIT SELECT AS DRIVE 0
358 0000 OCTAL
359 0124 0200 200
360 0000 DECIMAL
361
362 0125 0202 JUMP F0 /GO STORE SOFT UNIT BIT
363 0126 0134 UDIF
364
365 0127 0176 UZERO, BR FLAG0 ONE /IF FLAG=1 DRIVE 0 IS DESIRED AND ALREADY SELECTED
366 0130 0141 USAME
367
368
369 0131 0036 UNIT ONE /DRIVE 1 IS DESIRED BUT DRIVE0 IS SELECTED, SELECT DRIVE 1
370 0132 0070 LCT
371 0133 0000 0
372
373 0134 0075 UDIF, LSR /STORE SOFT UNIT SELECT BIT
374 0135 0064 LSP
375
376 0136 0074 ROTATE ZERO /CLR SOFT HD LOAD BIT BECAUSE UNITS CHANGED
```

```
377 0137 0250 OPEN TEMPE
378 0140 0064 LSP
379
380 0141 0070 USAME, LCT /CALL GETWRO SUBROUTINE FOR THE SECTOR ADDRESS
381 0142 0145 PUTSEC
382 0143 0222 JUMP F4
383 0144 2000 GETWRO
384
385
386 0145 0070 PUTSEC, LCT /MAKE FIRST BIT OF COMPLIMENTED SECTOR ADDRESS A 1 REGARDLESS OF DATA
387 0146 0370 -7-1
388 0147 0076 ROTATE ONE
389 0150 0126 BR COFL T
390 0151 0160 .+7
391 0152 0073 ICT
392 0153 0122 BR SR7 T
393 0154 0147 .-5
394 0155 0074 ROTATE ZERO
395 0156 0202 JUMP F0
396 0157 0150 .-7
397
398 0160 0224 OPEN TARSEC /PUT THE TARGET SECTOR AWAY
399 0161 0064 LSP
400
401 0162 0070 LCT /CALL GETWRO SUBROUTINE FOR TRACK ADDRESS
402 0163 0166 PUTTRK
403 0164 0222 JUMP F4
404 0165 2000 GETWRD
405
406
407 0166 0220 PUTTRK, OPEN TARTRK /STASH THE TRACK ADDRESS
408 0167 0064 LSP
409
410 0170 0254 OPEN TEMPF /START SETUP FOR COMPARING THE
411 0171 0064 LSP /TARGET TRACK AND TRACK 76
412 0172 0260 OPEN TEMPG /F= TARGET TRACK
413 0173 0070 LCT /G= 77
414 0174 0262 -77-1
415 0175 0075 LSR
416 0176 0064 LSP
417
418 0177 0070 LCT /CALL SUBR MAGCOM TO SEE IF TARGET TRACK
419 0200 0206 ILTRK /IS GREATER THAN 114 OCTAL, 76 DECIMAL.
420 0201 0075 LSR
421 0202 0270 OPEN RTNA
422 0203 0064 LSP
423 0204 0226 JUMP F5
424 0205 2400 MAGCOM
425
426
427 0206 0202 ILTRK, JUMP F0 /TARGET TRACK IS 77, ILLEGAL ADDRESS
428 0207 0242 ETRK /GO, REPORT THE ERROR
429 0210 0202 JUMP F0 /TARGET TRACK IS GREATER THAN 77
430 0211 0242 ETRK /GO, REPORT THE ERROR
431
```

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/RX01 FLOPPY CONTROLLER FIRMWARE      PAL10  VI42A  9-FEB-76      9:17  PAGE 7-2

432  0212  0244      OPEN TEMPO      /TARGET TRACK IS OK. GET THE DRIVE
433  0213  0071      ESP              /SELECT FROM TEMPO
434  0214  0075      LSR
435
436  0215  0200      OPEN CURTK0      /PRESELECT UNIT 0
437
438  0216  0002      DISK              /SELECT DISK BUSS
439
440  0217  0122      BR SR7 ONE      /WHICH UNIT SELECTED? BIT7=0 MEANS UNIT ONE
441  0220  0222      .+2              /ZERO, SKIP UNIT 1 SETUP
442  0221  0204      OPEN CURTK1
443
444  0222  0071      ESP              /PASS SELECTED CURRENT TRACK TO MAGCOM SUBR
445  0223  0075      LSR
446  0224  0260      OPEN TEMPG
447  0225  0064      LSP
448
449  0226  0220      OPEN TARTRK      /PASS TARGET TRACK TO MAGCOM SUBROUTINE
450  0227  0071      ESP
451  0230  0075      LSR
452  0231  0254      OPEN TEMPF
453  0232  0064      LSP
454  0233  0070      LCT              /CALL SUBROUTINE MAGCOM TO SEE IF TARGET
455  0234  0246      TRKEQ            /IS SAME AS CURRENT TRACK. F=TARGET, G=CURRENT
456  0235  0075      LSR
457  0236  0270      OPEN RTNA
458  0237  0064      LSP
459  0240  0226      JUMP F5
460  0241  2400      MAGCOM
461
462
463  0242  0070      ERTRK, LCT
464  0243  0040      KERTRK
465  0244  0226      JUMP F5      /TRIED TO ACCESS A TRACK GREATER THAN 76 DECIMAL
466  0245  2610      GOERDN
467
468
469  0246  0202      TRKEQ, JUMP F0      /TARGET EQUALS THE CURRENT TRACK, NO
470  0247  0357      NOSTPS          /STEPS ARE REQUIRED
471  0250  0270      OPEN RTNA      /NOOP, TARGET > ACTUAL RETURN
472  0251  0270      OPEN RTNA      /NOOP
473
474  0252  0270      BOOT,  OPEN RTNA      /TARGET IS LESS THAN ACTUAL, STEPS NEEDED ALSO START OF
475  0253  0070      LCT              /OF BOOT SUBROUTINE. SET UP RETURN FROM DIF SUBR
476  0254  0275      STPOUT
477  0255  0075      LSR
478  0256  0064      LSP
479
480  0257  0244      OPEN TEMPO      /SOFT UNIT SELECT BIT TO SR7
481  0260  0071      ESP
482  0261  0075      LSR
483
484  0262  0204      OPEN CURTK1      /PRESELECT UNIT 1
485
486  0263  0120      BR SR7 ZERO      /SR7=0 MEANS UNIT ONE

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/RX01 FLOPPY CONTROLLER FIRMWARE      PAL10  VI42A  9-FEB-76      9:17  PAGE 7-3

487  0264  0266      .+2
488  0265  0200      OPEN CURTK0
489
490  0266  0071      ESP              /PASS SELECTED CURRENT TRACK TO DIFF SUBR VIA SR
491  0267  0075      LSR
492
493  0270  0220      OPEN TARTRK      /PASS TARGET TRACK TO DIF VIA CNTR
494  0271  0071      ESP
495
496  0272  0016      SET HDOUT      /ASSUME A STEP OUT
497
498  0273  0226      JUMP F5
499  0274  2462      OIF            /GO TO THE SUBROUTINE DIF TO CALCULATE THE STEPS NEEDED
500
501
502  0275  0202      STPOUT, JUMP F0      /TARGET TRACK IS LESS THAN
503  0276  0300      .+2            /THE ACTUAL, MOVE OUT IS NECESSARY
504
505  0277  0014      CLR HDOUT      /TARGET IS GREATER THAN ACTUAL. STEPS IN NEEDED
506
507  0300  0070      LCT
508  0301  0305      OUNSTP          /COMPLEMENT OF STEPS REQUIRED IS IN THE
509                                /SHIFT REG. SET UP RETURN FROM STPHD SUBR
510  0302  0040      UNHO
511                                /UNLOAD HEAD BEFORE MOVING
512  0303  0222      JUMP F4
513  0304  2100      STEPHD          /CALL SUBROUTINE STEPHD
514
515
516  0305  0226      DUNSTP, JUMP F5      /HOME FOUND BEFORE LAST STEP TAKEN
517  0306  2456      HOMERR
518
519  0307  0244      OPEN TEMPD      /SOFT UNIT BIT TO SR7
520  0310  0071      ESP
521  0311  0075      LSR
522  0312  0220      OPEN TARTRK      /GET READY TO PASS TARGET TRK TO PROPER
523  0313  0071      ESP            /CURRENT TRACK
524
525  0314  0200      OPEN CURTK0      /OPEN PROPER CURRENT TRACK REGISTER
526  0315  0122      BR SR7 ONE      /BIT7=0 MEANS UNIT ONE
527  0316  0320      .+2
528  0317  0204      OPEN CURTK1
529
530  0320  0075      LSR
531  0321  0064      LSP            /UPDATE THE CURRENT TRACK ADDRESS
532
533
534  0322  0220      HDSETL, OPEN TARTRK /HEAD IS SETTLED DETERMINE IF ABOVE TPACK 43 DECIMAL
535  0323  0071      ESP              /PASS TARGET TO MAGCOM VIA TEMPF
536  0324  0075      LSR
537  0325  0254      OPEN TEMPF
538  0326  0064      LSP
539
540  0327  0070      LCT
541  0330  0323      =44=1          /PASS 44 TO MAGCOM VIA TEMPG

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542	0331	0075	LSR	
543	0332	0260	OPEN TEMPG	
544	0333	0064	LSP	
545				
546	0334	0026	SET LOWCUR	/ASSUME TARGET GREATER THAN 43
547				
548	0335	0070	LCT	/CALL MAGCOM SUBROUTINE
549	0336	0344	ABV43	/RETURN ADDRESS
550	0337	0075	LSR	
551	0340	0270	OPEN RTNA	
552	0341	0064	LSP	
553	0342	0226	JUMP F5	
554	0343	2400	MAGCOM	
555				
556				
557	0344	0202	ABV43, JUMP F0	/NOOP F0 RETURN, ABOVE TRK 43
558	0345	0346	.+1	/NOOP
559				
560	0346	0202	JUMP F0	/F<G; ABOVE TRACK 43
561	0347	0351	.+2	
562				
563	0350	0024	CLR LOWCUR	/F>G; BELOW TRACK 43. WRITE WITH HIGH CURRENT
564				
565	0351	0070	CFINSE, LCT	/CALL FINDSEC SUBROUTINE TO LOCATE THE DESIRED SECTOR
566	0352	0355	RFINTR	
567	0353	0206	JUMP F1	
568	0354	0714	FINDSE	
569				
570	0355	0274	RFINTR, OPEN RTN	/RETURN FROM FINDTR SUBROUTINE
571	0356	0207	JUMP F1 IND	
572				
573				
574	0357	0250	NOSTPS, OPEN TEMPE	/NO STEPS REQUIRED
575	0360	0071	ESP	/SOFT HEAD LOAD BIT TO SR7
576	0361	0075	LSR	
577				
578	0362	0122	BR SR7 DNE	/IS HEAD LOADED?
579	0363	0322	HDSETL	/YES, GO UPDATE CURRENT CONTRL
580				
581	0364	0070	LCT	/NO, GO LOAD HEAD AND WAIT FOR 20MS SETTLE TIME
582	0365	0322	HDSETL	/RETURN ADDR FROM DLY25 SUBROUTINE
583	0366	0222	JUMP F4	
584	0367	2145	DLY25	
585				
586				
587	0370	0212	PFUNCT, JUMP F2	/PDINTER FROM GETWORD SUBROUTINE TO
588	0371	1036	FUNCT	/FUNCTION DECODE
589				
590	0372	0226	PDRCL, JUMP F5	/POINTER TO DRV CHECK DONE AFTER RECALIBRATE
591	0373	2625	DNRCAL	
592				
593	0374	0000	0	/SPARE LOCATIONS
594	0375	0000	0	/OPEN
595	0376	0000	0	/OPEN
596	0377	0000	0	/OPEN

597			/[ROUTINE: WRITE SECTOR]	
598			/THIS ROUTINE TURNS ON WRITE GATE AT WRITE TURN ON TIME,	
599			/WRITES A PREAMBLE OF 6 BYTES OF ZEROES, A DATA OR DELETED DATA MARK,	
600			/THEN TURNS ON ERASE GATE, ENTER WITH CNTR=100 IF	
601			/DELETED DATA, CNTR=0 IF NORMAL DATA MARK. THE DATA MARK, DATA FIELD, CRC	
602			/AND ONE BYTE POSTAMBLE ARE WRITTEN. WRITE CURRENT IS TURNED OFF.	
603			/511 MICRO SECONDS LATER ERASE CURRENT IS TURNED OFF. A HEADER MUST	
604			/THEN BE READ TO INSURE DISK IS STILL UP TO SPEED BEFORE THE WRITE	
605			/SECTOR FUNCTION IS COMPLETE.	
606				
607				
608				
609				
610	0400	0214	WRTSEC, OPEN STAT	/DEL DATA BIT TO STAT6
611	0401	0075	LSR	
612	0402	0064	LSP	
613				
614	0403	0070	LCT	/CALL SUBROUTINE TO FIND DESIRED TRACK AND SECTOR
615	0404	0407	SWGATE	
616	0405	0202	JUMP F0	
617	0406	0103	FINDTR	
618				
619	0407	0061	SWGATE, FLAG OFF	/ALWAYS START WRITING WITH WRITE FLOP CLEARED
620				
621	0410	0140	BR WRTEN F	/GO REPORT ERROR IF NO WRITE ENABLE
622	0411	0503	PRTErr	
623				
624	0412	0214	OPEN STAT	/DEL DATA BIT TO SR7 AND ENABLE WRT CURRENT
625	0413	0071	ESP	
626	0414	0006	SET WGATE	
627	0415	0075	LSR	
628	0416	0074	ROTATE ZERO	
629				
630	0417	0234	OPEN TEMPB	/USE TEMPB FOR SECOND HALF DATA AM PATTERN
631				
632	0420	0057	PRECRC	/JAM THE CRC GENERATOR WITH FIRST 6 BITS OF DATA AM
633	0421	0056	CRC ONE	
634	0422	0056	CRC ONE	
635	0423	0056	CRC ONE	
636	0424	0056	CRC ONE	
637	0425	0056	CRC ONE	
638	0426	0054	CRC ZERO	
639				
640	0427	0120	BR SR7 ZERO	/DELETED DATA?
641	0430	0460	DAMSUP	/NO, REGULAR DATA MARK
642				
643	0431	0070	LCT	/YES, SECOND HALF OF DELETED DATA MARK TO CNTR
644			OCTAL	
645	0432	0325	325	/FLUX PATTERN
646			DECIMAL	
647				
648	0433	0054	CRC ZERO	/JAM LAST 2 BITS OF DELETED DATA MARK TO CRC GEN.
649	0434	0054	CRC ZERO	
650	0435	0002	DISK	/NOOP
651	0436	0002	DISK	/NOOP

652					
653	C437	0063	STASH, TCG FLAG		/END OF THE FIRST 8 BIT
654					
655	C403	0075	LSR		/PUT SECOND HALF OF THE DESIRED MARK IN THE TEMPO
656	C401	0064	LSR		
657					
658	C002	0078	LCT		/SET UP RETURN FROM WRITE ZEROS SUBROUTINE
659	C003	0066	HLFCLV		
660	0008	0075	LSR		
661					
662	C445	0072	LCT		/STALL 1.0 MICRO SECONDS
663	C446	0374	-3-1		
664	C447	0073	ICT		
665	C450	0124	BR COFL F		
666	0451	0447	-2		
667	0452	0002	DISK		/NOOP
668					
669	0453	0078	LCT		/SPECIFY 22 ZEROS TO BE WRITTEN BY WRTOS SUBROUTINE
670	0454	0351	-22-1		
671					
672	C455	0063	TOG FLAG		/WRITE SECOND CLOCK TRANSITION
673					
674	C456	0212	JUMP F2		/CALL WRITE ZEROS SUBROUTINE
675	C457	1322	WRTOS		
676					
677	0460	0078	DAMSUP, LCT		/LOAD SECOND HALF OF NORMAL DATA MARK
678			OCTAL		
679	0461	0337	337		
680			DECIMAL		
681					
682	0462	0056	CRC ONE		/JAM LAST 2 BITS OF DATA MARK TO CRC GENERATOR
683	0463	0056	CRC ONE		
684					
685	0464	0206	JUMP F1		/GO PUT AWAY THE SECOND HALF OF THE DATA MARK
686	0465	0437	STASH		
687					
688	0466	0002	HLFCLV, DISK		/NOOP
689					
690	0467	0078	LCT		
691	0470	0514	WRTDAM		/SET UP RETURN FROM WRITE ZEROS SUBROUTINE
692	0471	0075	LSR		
693					
694	0472	0078	LCT		/NOOP WASTE .8 MICRO SECONDS
695	0473	0351	-22-1		/NOOP
696	0474	0078	LCT		/NOOP
697	0475	0351	-22-1		/NOOP
698					
699	0476	0078	LCT		/SPECIFY 22 BITS TO BE WRITTEN BY WRTOS SUBROUTINE
700	0477	0351	-22-1		
701					
702	0500	0063	TOG FLAG		/WRITE THE 25TH CLOCK TRANSITION
703					
704	0501	0212	JUMP F2		/CALL WRTOS SUBROUTINE
705	0502	1322	WRTOS		
706					

707	0503	0078	PRERR, LCT		/SET WRITE PROTECT BIT OF STAT BECAUSE A WRITE FUNCTION WAS ATTEMPTED ON
708					/ON A WRITE PROTECTED DISKETTE
709					
710	0504	0010	OCTAL		
711			10		
712	0505	0075	DECIMAL		
713	0506	0214	LSR		
714	0507	0064	OPEN STAT		
715			LSR		
716	0510	0078	LCT		/ERROR CODE FOR WRT PROTECT ERROR
717	0511	0100	KWPROT		
718	0512	0226	JUMP F5		
719	0513	2610	GOERDN		
720					
721					
722					
723					/THIS ROUTINE WILL WRITE EITHER A DATA MARK OR A
724					/DELETED DATA MARK. THE FIRST HALF OF BOTH MARKS ARE
725					/IDENTICAL. THE SECOND HALF IS SPECIFIED BEFORE ENTRY BY
726					/PUTTING THE SECOND HALF BIT PATTERN IN TEMPO
727					
728					
729	0514	0078	WRTDAM, LCT		/WASTE 2.0 MICRO SECONDS
730	0515	0375	-2-1		
731	0516	0073	ICT		
732	0517	0075	LSR		
733	0520	0124	BR COFL F		
734	0521	0516	-3		
735					
736	0522	0063	TOG FLAG		/WRITE A CLOCK BIT AS END OF BOTH ZERO
737					
738	0523	0078	LCT		/FIRST HALF OF DATA MARK PATTERN TO CR
739			OCTAL		
740	0524	0352	352		
741			DECIMAL		
742	0525	0075	LSR		
743					
744	0526	0270	LCT		/SET TRANSITION LOOP COUNTER FOR 0 LCCPS
745	0527	0378	-7-1		
746	0530	0202	DISK		/NOOP
747					
748	0531	0120	AGAIN, BR SR7 ZERO		/WHAT'S THE BIT?
749	0532	0562	A		/ZERO, NO TRANSITION
750					
751	0533	0344	CLR DAM		/GAE, RESET THE BUFFER ADDR REG TO 0
752					
753	0534	0063	TOG FLAG		/WRITE FLUX TRANSITION
754					
755	0535	0126	ABACK, BR COFL T		/CHECK TRANSITION LOOP COUNT
756	0536	0503	SECHLF		/GO GET SECOND HALF
757					
758	0537	0078	ROTATE		/SHIFT NEXT TRANSITION TO CR7
759					
760	0540	0273	ICT		/BUMP TRANSITION LOOP COUNTER
761					

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762 0541 0206 JUMP F1 /DO ANOTHER LOOP
763 0542 0531 AGAIN
764
765 0543 0234 SECHLF, OPEN TEMPB /SECOND HALF OF DATA MARK TO SR
766 0544 0071 ESP
767 0545 0075 LSR
768
769 0546 0070 LCT /SET TRANSITION LOOP COUNTER FOR 8 LOOPS
770 0547 0370 -7-1
771
772
773 0550 0120 AGAIN1, BR SR7 ZERO /SHALL WE WRITE A TRANSITION?
774 0551 0564 B /NO
775
776 0552 0063 TOG FLAG /YES
777 0553 0002 DISK /NOOP
778
779 0554 0126 BBACK, BR COFL T /DONE DATA MARK?
780 0555 0566 WRTDAT /YES, GO WRITE DATA
781
782 0556 0073 ICT /NO, BUMP THE LOOP COUNTER
783
784 0557 0074 ROTATE /BRING UP NEXT HALF BIT TO SR7
785
786 0560 0206 JUMP F1 /DO ANOTHER LOOP
787 0561 0550 AGAIN1
788
789 0562 0206 A, JUMP F1 /WASTE 2 CYCLES TO SKIP FLUX TRANSITION
790 0563 0535 ABACK
791
792 0564 0206 B, JUMP F1 /WASTE 2 CYCLES TO SKIP FLUX TRANSITION
793 0565 0554 BBACK
794
795
796
797
798 /THIS ROUTINE WRITES THE CONTENTS OF THE SECTOR BUFFER.
799
800
801 0566 0022 WRTDAT, SET EGATE /TURN ON ERASE CURRENT AT START OF DATA FIELD
802 0567 0073 ICT /NOOP, WASTE 2 CYCLES
803 0570 0073 ICT /NOOP
804
805 0571 0170 DATA, BR BDATA0 ZERO /WHATS THE DATA BIT?
806 0572 0615 C /ZERO, GO WRITE NOTHING
807
808 0573 0056 CHC ONE /ONE, UPDATE THE CRC WITH 1
809
810 0574 0063 TOG FLAG /WRITE A DATA TRANSITION
811 0575 0073 ICT /NOOP FOR BIT CELL TIMING
812
813 0576 0162 CBACK, BR BAROFL T /DONE ENTIRE SECTOR?
814 0577 0624 WRTCRC /YES, GO WRITE THE CRC
815
816 0600 0046 INCR BAR /NO, BRING UP NEXT DATA BIT FROM SEC BUFFER

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817
818 0601 0070 LCT /NOOP = WASTE 5 CYCLES WITH
819 0602 0376 -2 /NOOP = A SELF TEST OF THE COUNTER
820 0603 0073 ICT /NOOP
821 0604 0124 BR COFL F /NOOP
822 0605 0620 SELFER /NOOP
823
824 0606 0063 TOG FLAG /WRITE A CLOCK TRANSITION
825
826 0607 0070 LCT /NOOP = WASTE 4 CYCLES WITH
827 0610 0377 -1 /NOOP = A SELF TEST OF THE COUNTER
828 0611 0124 BR COFL F /NOOP
829 0612 0620 SELFER /NOOP
830
831 0613 0206 JUMP F1 /GO WRITE ANOTHER DATA BIT
832 0614 0571 DATA
833
834 0615 0054 C, CRC ZERO /UPDATE CRC WITH 0 AND SKIP DATA TRANSITION
835 0616 0206 JUMP F1
836 0617 0576 CBACK
837
838
839 0620 0070 SELFER, LCT /A SELF DIAGNOSTIC HAS FAILED
840 0621 0060 KSELFER
841 0622 0226 JUMP F5
842 0623 0610 GOERDN
843
844
845 /THIS ROUTINE WRITES THE 16 BIT CRC GENERATED FOR THE
846 /PRECEDING DATA FIELD.
847
848
849 0624 0070 WRTCRC, LCT /PRESET BIT COUNTER FOR 16 BITS
850 0625 0357 -16-1
851
852 0626 0075 LSR /NOOP WASTE 4 CYCLES AND SELF TEST THE SR
853 0627 0002 DISK /NOOP
854 0630 0120 BR SR7 ZERO /NOOP
855 0631 0620 SELFER /NOOP
856
857 0632 0063 TOG FLAG /WRITE A CLOCK TRANSITION
858
859 0633 0076 ROTATE ONE /NOOP WASTE 6 CYCLES WITH MORE SELFTEST
860 0634 0076 ROTATE ONE /NOOP
861 0635 0076 ROTATE ONE /NOOP
862 0636 0076 ROTATE ONE /NOOP
863 0637 0120 BR SR7 ZERO /NOOP
864 0640 0620 SELFER /NOOP
865
866 0641 0130 BR CRC16 ZERO /WHAT IS THE CRC BIT
867 0642 0653 0 /ZERO, DO NOT WRITE ANYTHING
868
869 0643 0056 CRC ONE /ONE, BRING UP THE NEXT BIT
870
871 0644 0063 TOG FLAG /WRITE A DATA TRANSITION

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/RX01 FLOPPY CONTROLLER FIRMWARE      PAL10  V142A  9-FEB-76      9117  PAGE 8-5

872      0645 0076      ROTATE ONE      /NOOP
873
874      0646 0073      DBACK, ICT      /BUMP THE BIT COUNTER
875
876      0647 0126      BR COFL T      /DONE CRC YET?
877      0650 0656      WRT08T      /YES, GO WRITE A POSTAMBLE
878
879      0651 0206      JUMP F1      /NO, GO WRITE ANOTHER CRC BIT
880      0652 0627      E
881
882      0653 0054      D, CRC ZERO      /BRING UP NEXT CRC BIT AND SKIP DATA TRANSITION
883      0654 0206      JUMP F1
884      0655 0646      DBACK
885
886
887      /THIS ROUTINE WRITES THE ONE BYTE POSTAMBLE, TURNS OFF
888      /WRITE CURRENT, DELAYS 511 MICRO SEC AND TURNS OFF ERASE
889      /CURRENT, IT UTILIZES THE WRITE ZEROES SUBROUTINE.
890
891
892
893      0656 0070      WRT08T, LCT      /SETUP TO CALL WRT08 TO WRITE 8 BITS OF ZEROES
894      0657 0666      CWGATE
895      0660 0075      LSR
896      0661 0070      LCT
897      0662 0367      -8-1
898
899      0663 0063      TDG FLAG      /WRITE LAST CLOCK TRANSITION OF THE CRC FIELD
900
901      0664 0212      JUMP F2      /CALL THE SUBROUTINE WRITE ZEROES
902      0665 1322      WRT08
903
904
905      0666 0004      CWGATE, CLR WGATE      /DISABLE WRITE CURRENT
906
907      0667 0070      LCT
908      0670 0676      CEGATE      /CALL WRT08 FOR 127 BITS (511.2 MICRO SEC)
909      0671 0075      LSR      /DELAY TO ERASE TURN OFF
910      0672 0070      LCT
911      0673 0200      -127-1
912      0674 0212      JUMP F2
913      0675 1322      WRT08
914
915
916      0676 0020      CEGATE, CLR EGATE      /DISABLE ERASE CURRENT
917
918      0677 0070      LCT
919      0700 0706      READOK      /CALL WRT08 FOR 25 BIT (101 MICRO SEC) DELAY
920      0701 0075      LSR      /BEFORE TRYING TO READ
921      0702 0070      LCT
922      0703 0346      -25-1
923      0704 0212      JUMP F2
924      0705 1322      WRT08
925
926      0706 0070      READOK, LCT      /CALL FIND HEADER ROUTINE TO INSURE

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/RX01 FLOPPY CONTROLLER FIRMWARE      PAL10  V142A  9-FEB-76      9117  PAGE 8-6

927      0707 0712      GODONE      /THAT THE DISK IS STILL MOVING
928      0710 0216      JUMP F3
929      0711 1400      FINDHD
930
931      0712 0212      GODONE, JUMP F2      /WRITE SECTOR FUNCTION IS COMPLETE
932      0713 1006      OKDDNE
933
934
935      /[SUBROUTINE: FINDSECTOR]
936      /SUBROUTINE TO FIND A SPECIFIC SECTOR, ENTER WITH RETURN ADDRESS
937      /IN CNTR, DESIRED TRACK ADDRESS IN TARTRK AND DESIRED SECTOR ADDRESS
938      /IN TARSEC, THIS SUBROUTINE ASSUMES THAT THE TARGET TRACK HAS ALREADY
939      /BEEN REACHED.
940
941
942      0714 0270      FINDSE, OPEN RTNA      /SAVE RETURN ADDRESS
943      0715 0075      LSR
944      0716 0064      LSP
945
946      0717 0260      OPEN TEMPG      /PRESET SECTOR TRY COUNT TO 52 TRIES
947      0720 0070      LCT
948      0721 0313      -52-1
949
950      0722 0075      AGAIN2, LSR      /STORE SECTOR TRY COUNT
951      0723 0064      LSP
952
953      0724 0070      LCT      /CALL SUBROUTINE TO FIND A HEADER
954      0725 0730      CHKSEC
955      0726 0216      JUMP F3
956      0727 1400      FINDHD
957
958      0730 0174      CHKSEC, BR FLAG0 ZERO      /CORRECT SECTOR? FLAG=1 IF NO
959      0731 0743      WAIT      /YES, GO WAIT FOR PREAMBLE
960
961      0732 0260      OPEN TEMPG      /NO, RECALL SECTOR TRY COUNT AND INCREMENT IT
962      0733 0071      ESP
963      0734 0073      ICT
964
965      0735 0124      BR COFL F      /52 TRIES MADE FOR SECTOR YET?
966      0736 0722      AGAIN2      /NO, TRY ANOTHER SECTOR
967
968      0737 0070      NXHDR, LCT      /YES, CANN'T FIND THE SECTOR
969      0740 0070      KNXHDR
970      0741 0226      JUMP F5
971      0742 2610      GOERDN
972
973      0743 0070      WAIT, LCT      /STALL 323.2 MICRO SECONDS TO WAIT FOR DATA PREAMBLE
974      0744 0345      -26-1
975      0745 0073      ICT
976      0746 0124      BR COFL F
977      0747 0745      -2
978      0750 0073      ICT
979      0751 0124      BR COFL F
980      0752 0750      -2
981      0753 0073      ICT

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/RX01 FLOPPY CONTROLLER FIRMWARE      PAL10  V142A  9-FEB-76      9117  PAGE 8-7

982      0754  0124      BR COFL F
983      0755  0753      .-2
984
985      0756  0270      OPEN RTNA      /RETURN FROM THIS SUBROUTINE AT WRITE TURN ON TIME
986      0757  0203      JUMP F0 IND  /OF THE DESIRED SECTOR
987
988
989
990      /([ROUTINE: READ SECTOR])
991
992      0760  0074      ROSEC, ROTATE ZERO      /ZERO THE STAT
993      0761  0074      ROTATE ZERO
994      0762  0214      OPEN STAT
995      0763  0064      LSP
996
997      0764  0070      LCT      /CALL THE FIND TRACK SUBROUTINE TO LOCATE DESIRED SECTOR
998      0765  0770      GOREAD
999      0766  0202      JUMP F0
1000     0767  0103      FINOTR
1001
1002     0770  0222      GOREAD, JUMP F4      /GO READ THE DATA FIELD
1003     0771  2167      READ
1004
1005
1006     0772  0000      0      /OPEN FREE LOCATIONS
1007     0773  0000      0      /OPEN
1008     0774  0000      0      /OPEN
1009     0775  0000      0      /OPEN
1010     0776  0000      0      /OPEN
1011     0777  0000      0      /OPEN

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/RX01 FLOPPY CONTROLLER FIRMWARE      PAL10  V142A  9-FEB-76      9117  PAGE 9

1012      /([ROUTINE: DONE AND ERROR DONE])
1013
1014
1015     1000  0020      EPDONE, CLR DONE
1016     1001  0010      CLR XREQ
1017
1018     1002  0000      INTERF      /SELECT INTERFACE BUSS
1019
1020     1003  0006      SET ERR      /ASSERT ERROR LINE
1021
1022     1004  0212      JUMP F2      /SKIP NEXT INSTRUCTION
1023     1005  1007      .+2
1024
1025     1006  0004      OKDONE, CLR ERR      /NEGATE ERROR LINE
1026
1027     1007  0214      OPEN STAT      /OPEN STAT TO MOVE TO INTERFACE
1028
1029     1010  0071      ESP      /STAT OR ERREG TO SR
1030     1011  0075      LSR
1031
1032     1012  0024      CLR SHIFT      /CLEAR INTERFACE OUTPUT BUFFER
1033     1013  0020      CLR DONE
1034     1014  0010      CLR XREQ
1035
1036     1015  0000      INTERF      /SELECT INTERFACE OUTPUT BUSS
1037
1038     1016  0030      CLR SECOAT      /SELECT SR AS DATA LINE SOURCE
1039
1040     1017  0016      SET IOOUT      /DEFINE DATA DIRECTION AS OUT (TO INTERFACE)
1041
1042     1020  0070      LCT      /MOVE SR TO INTERFACE SERIALY
1043     1021  0367      -8-1
1044     1022  0026      SET SHIFT
1045     1023  0024      CLR SHIFT
1046     1024  0073      ICT
1047     1025  0074      ROTATE ZERO
1048     1026  0124      BR COFL F
1049     1027  1022      .-5
1050
1051     1030  0014      CLR IOOUT      /NEXT TRANSFER WILL BE FROM INTERFACE
1052
1053     1031  0022      STODNE, SET DONE      /FUNCTION IS DONE
1054     1032  0070      LCT      /CALL GET COMMAND SUBROUTINE TO GET NEXT FUNCTION
1055     1033  0370      PFUNCT
1056     1034  0222      JUMP F4
1057     1035  2001      GETCMO
1058
1059     1036  0074      FUNCT, ROTATE      /MOVE UNIT SELECT BIT TO SR7
1060     1037  0074      ROTATE
1061     1040  0074      ROTATE
1062     1041  0122      BR SR7 DNE      /FLAG IS ALREADY SET, SAVE UNIT IN FLAG, ON=UNIT 0
1063     1042  1044      .+2
1064     1043  0061      FLAG OFF
1065
1066     1044  0274      ROTATE      /GET FIRST FUNCTION BIT TO SR7

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1067			BR SR7 ZERO	
1068	1045	0120	FUNCT4	/FUNCTION 4 OR GREATER
1069	1046	1066		
1070			ROTATE	/GET 2ND FUNCTION BIT
1071	1047	0074		
1072			BR SR7 ZERO	
1073	1050	0120	FUNCT2	/FUNCTION CODE IS 2 OR 3
1074	1051	1057		
1075				
1076			ROTATE	/GET LAST FUNCTION BIT
1077	1052	0074		
1078			BR SR7 ZERO	
1079	1053	0120	EMPTYBUF	/FUNCTION CODE 1
1080	1054	1107		
1081			JUMP F2	/FUNCTION CODE 0
1082	1055	0212	FILLBUF	
1083	1056	1110		
1084				
1085	1057	0074	FUNCT2, ROTATE	/GET LAST FUNCTION BIT
1086				
1087	1060	0120	BR SR7 ZERO	
1088	1061	1105	PRDSEC	/FUNCTION CODE 3
1089				
1090	1062	0070	LCT	/CLR CNTR BITS TO INDICATE NORMAL DATA
1091	1063	0200	0	
1092	1064	0206	JUMP F1	/FUNCTION 2
1093	1065	0400	WRTSEC	
1094				
1095	1066	0074	FUNCT4, ROTATE	/GET 2ND FUNCTION BIT
1096				
1097	1067	0120	BR SR7 ZERO	
1098	1070	1076	FUNCT6	/FUNCTION CODE IS 6 OR GREATER
1099				
1100	1071	0074	ROTATE	/GET LAST FUNCTION BIT
1101				
1102	1072	0120	BR SR7 ZERO	
1103	1073	1224	RDSTAT	/FUNCTION 5
1104				
1105	1074	0212	JUMP F2	
1106	1075	1243	CLRID	/FUNCTION 4-UNUSED
1107				
1108	1076	0074	FUNCT6, ROTATE	/GET LAST FUNCTION BIT
1109				
1110	1077	0120	BR SR7 ZERO	
1111	1100	1275	RDEREG	/FUNCTION 7
1112				
1113	1101	0070	LCT	/SET CNTR6 TO INDICATE DELETED DATA
1114			OCTAL	
1115	1102	0100	100	
1116			DECIMAL	
1117	1103	0206	JUMP F1	/FUNCTION 6
1118	1104	0400	WRTSEC	
1119				
1120	1105	0206	PRDSEC, JUMP F1	/POINTER TO READ SECTOR FUNCTION
1121	1106	0760	RDSEC	

1122				
1123				
1124				
1125				
1126				
1127				
1128				
1129				
1130				
1131				
1132	1107	0016	EMPTYBUF, SET IOOUT	/IOOUT IS CLEARED, SET IT TO INDICATE DATA IS
1133				/MOVING TO THE INTERFACE
1134				
1135	1110	0074	FILLBUF, ROTATE ZERO	/CLEAR STAT
1136	1111	0074	ROTATE ZERO	
1137	1112	0214	OPEN STAT	
1138	1113	0064	LSP	
1139				
1140	1114	0210	OPEN ERREG	/CLEAR ERREG
1141	1115	0064	LSP	
1142				
1143	1116	0061	FLAG OFF	/NOOP
1144				
1145	1117	0044	CLR BAR SHORT	/ADDRESS THE 1ST BIT OF SECTOR BUFFER
1146				
1147	1120	0070	LCT	/SET UP BYTE COUNT TO 128 (8 BIT) OR 64 (12 BIT)
1148	1121	0177	-128-1	
1149	1122	0150	BR XIIBIT F	
1150	1123	1126	,+3	
1151	1124	0070	LCT	
1152	1125	0277	-64-1	
1153	1126	0230	OPEN TEMPA	
1154				
1155	1127	0106	BR IOB30T T	/WHICH FUNCTION IS THIS?
1156	1130	1212	EMPTY1	/EMPTYBUF
1157				
1158	1131	0012	XFRQ, SET XREQ	/REQUEST DATA TRANSFER
1159				
1160	1132	0073	ICT	/INCREMENT BYTE COUNT AND RESTORE
1161	1133	0075	LSR	
1162	1134	0064	LSP	
1163				
1164	1135	0070	LCT	/CALL WAITRUN SUBR TO WAIT FOR DATA TRANSFER
1165	1136	1141	NEWORD	
1166	1137	0222	JUMP F4	
1167	1140	2312	WAITRN	
1168				
1169	1141	0230	NEWORD, OPEN TEMPA	/REOPEN THE BYTE COUNT REGISTER BECAUSE WAITRUN CLOSED IT
1170	1142	0070	LCT	/SET UP BIT COUNT IN CNTR TO 8 BITS OR 12 BITS
1171	1143	0367	-8-1	
1172	1144	0150	BR XIIBIT F	
1173	1145	1150	,+3	
1174	1146	0070	LCT	
1175	1147	0363	-12-1	
1176				

1177	1150	0104	BR IOB3OT F	/WHICH FUNCTION IS THIS?
1178	1151	1175	FILL1	/FILLBUF
1179				
1180				
1181	1152	0026	BYTEOUT, SET SHIFT	/EMPTYBUF, MOVE A BYTE FROM SECTOR BUFFER
1182	1153	0046	INCR BAR	/TO INTERFACE SERIALY
1183	1154	0024	CLR SHIFT	
1184	1155	0073	ICT	
1185	1156	0124	BR COFL F	
1186	1157	1152	BYTEOUT	
1187				
1188	1160	0071	ESP	/CHECK BYTE COUNT
1189	1161	0124	BR COFL F	
1190	1162	1131	XFRQ	/NOT DONE, GO REQUEST A DATA TRANSFER
1191				
1192	1163	0012	SET XREQ	/DONE, REQUEST TRANSFER OF LAST BYTE
1193				
1194	1164	0100	BR RUN F	/WAIT FOR TRANSFER COMPLETION
1195	1165	1164	,=1	
1196				
1197	1166	0010	CLR XREQ	
1198				
1199	1167	0212	JUMP F2	
1200	1170	1006	OKDONE	/EMPTYBUF FUNCTION IS COMPLETE
1201				
1202	1171	0050	FIN WRTBUF	/END SECTOR BUFR WRT PULSE (800 NS)
1203				
1204	1172	0046	INCR BAR	/ADDRESS NEXT CELL OF SECTOR BUFFER
1205				
1206	1173	0026	SET SHIFT	/SHIFT NEXT BIT FROM INTERFACE
1207	1174	0024	CLR SHIFT	
1208				
1209	1175	0053	FILL1, START WRTBUF	/START SECTOR BUFR WRT PULSE
1210				
1211	1176	0073	ICT	/LAST BIT OF BYTE?
1212	1177	0124	BR COFL F	
1213	1200	1171	,=7	/NO, DO ANOTHER BIT
1214				
1215	1201	0050	FIN WRTBUF	/LAST BIT, END SECTOR BUFR WRT PULSE
1216				
1217	1202	0046	INCR BAR	/ADDRESS NEXT CELL OF SECTOR BUFFER
1218				
1219	1203	0071	ESP	/CHECK BYTE COUNT
1220	1204	0124	BR COFL F	
1221	1205	1131	XFRQ	/NOT DONE, GO GET ANOTHER BYTE
1222				
1223	1206	0212	JUMP F2	/DONE FILLBUF FUNCTION
1224	1207	1006	OKDONE	
1225				
1226	1210	0032	EMPTY1, SET SECCAT	/SELECT SECTOR BUFR AS DATA LINE SOURCE
1227				
1228	1211	0073	ICT	/INCREMENT AND SAVE THE BYTE COUNT
1229	1212	0075	LSR	
1230	1213	0064	LSR	
1231				

1232	1214	0070	LCT	/SET UP THE BIT COUNT TO 8 BITS OR 12 BITS
1233	1215	0067	=8-1	
1234	1216	0150	BR X11BIT F	
1235	1217	1152	BYTEOUT	
1236	1220	0070	LCT	
1237	1221	0063	=12-1	
1238				
1239	1222	0212	JUMP F2	/GO MOVE A BYTE TO INTERFACE
1240	1223	1152	BYTEOUT	
1241				
1242				
1243				
1244				
1245				
1246				
1247	1224	0244	ROSTAT, OPEN TEMPD	/SELECT THE SOFT UNIT SCRATCH PAD
1248				
1249	1225	0036	UNIT ONE	/PRESELECT UNIT ONE
1250	1226	0070	LCT	
1251	1227	0000	0	
1252				
1253	1230	0174	BR FLAGO ZERO	/WHICH UNIT? FLAG=0=UNIT 1
1254	1231	1235	,+4	/UNIT 1, SKIP UNIT 0 SETUP
1255				
1256	1232	0034	UNIT ZERO	/SELECT UNIT ZERO
1257	1233	0070	LCT	
1258				
1259	1234	0200	OCTAL	
1260			200	
1261			DECIMAL	
1262	1235	0075	LSR	/STORE SOFT UNIT BIT
1263	1236	0064	LSR	
1264				
1265	1237	0070	LCT	/CALL CHECKRDY SUBROUTINE, RETURN TO CLRID
1266	1240	1765	PNTRDY	
1267	1241	0226	JUMP F5	
1268	1242	2640	CHKRDY	
1269				
1270				
1271				
1272	1243	0214	CLRID, OPEN STAT	/CLEAR INIT DONE BIT OF STAT
1273	1244	0071	ESP	/STATUS TO SHIFT REG
1274	1245	0075	LSR	
1275				
1276	1246	0061	FLAG OFF	
1277	1247	0070	LCT	/END AROUND SHIFT OF FIRST 5 BITS
1278	1250	0372	=5-1	
1279	1251	0122	BR SR7 T	
1280	1252	1256	,+4	
1281	1253	0074	ROTATE ZERO	
1282	1254	0212	JUMP F2	
1283	1255	1257	,+2	
1284	1256	0076	ROTATE ONE	
1285	1257	0073	ICT	
1286	1260	0124	BR COFL F	

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1287      1261 1251      .-8
1288
1289      1262 0176      BR FLAG T      /IF FLAG IS SET THEN ROTATE IS DONE
1290      1263 1272      GODUN
1291
1292      1264 0062      FLAG ON      /IF NOT, CLEAR INIT DONE AND FINISH ROTATE
1293      1265 0074      ROTATE ZERO
1294      1266 0070      LCT
1295      1267 0375      -2-1
1296      1270 0212      JUMP F2
1297      1271 1251      ROT
1298
1299
1300      1272 0064      GODUN, LSP      /RESTORE STAT AND GO DONE
1301      1273 0212      JUMP F2
1302      1274 1006      OKOONE
1303
1304      /ROUTINE: READ ERROR REGISTER]
1305
1306
1307
1308      1275 0210      ROEREG, OPEN ERREG
1309      1276 0212      JUMP F2
1310      1277 1010      OKOONE+2
1311
1312
1313      /SUBROUTINE: DELAY], THIS SUBROUTINE PROVIDES DELAYS IN MULTIPLES
1314      /OF .1MS. ENTER WITH RETURN ADDRESS IN THE SHIFT REG,
1315      /AND MULTIPLIER IN THE COUNTER
1316
1317
1318      1300 0264      OELAY, OPEN RTNB      /SAVE THE RETURN ADDRESS
1319      1301 0064      LSP
1320
1321      1302 0075      LSR      /MULTIPLIER TO SHIFT REGISTER
1322
1323      1303 0070      LCT      /OELAY 490 CYCLES (98 MICRO SECONOS)
1324      1304 0205      -122-1
1325      1305 0073      ICT
1326      1306 0264      OPEN RTNB
1327      1307 0124      BR COFL F
1328      1310 1305      .-3
1329
1330      1311 0071      ESP      /MOVE MULTIPLIER TO CNTR VIA RTNB
1331      1312 0064      LSP
1332      1313 0075      LSR
1333      1314 0071      ESP
1334      1315 0064      LSP
1335
1336      1316 0073      ICT      /INCREMENT THE MULTIPLIER
1337
1338      1317 0124      BR COFL F      /ANY MORE .1MS LOOPS?
1339      1320 1301      DELAY+1      /YES, GO TO IT
1340
1341      1321 0223      JUMP F4 IND      /NO, RETURN FROM SUBROUTINE

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1342
1343      /SUBROUTINE: WRITE ZEROES]
1344      /THIS SUBROUTINE WRITES A SPECIFIED NUMBER OF ZEROS IF
1345      /WRITE GATE IS ON, IF WRITE GATE IS OFF IT ACTS AS A
1346      /DELAY OF N.5 BITS, ENTRANCE IS MADE WITH RETURN ADDRESS
1347      /IN THE SR, NUMBER OF BITS IN THE CNTR, AND A CLOCK
1348      /TRANSITION OCCURRING IMMEDIATELY PRIOR TO THE JUMP INTO
1349      /THIS SUBROUTINE.
1350
1351
1352      1322 0274      *RT0S, OPEN RTN      /SAVE RETURN ADDRESS
1353      1323 0064      LSP
1354
1355      1324 0075      LSR      /PUT BIT COUNTER IN SR
1356
1357      1325 0230      OPEN TEMPA      /TEMPA IS THE PATH THROUGH THE SP
1358
1359      1326 0070      LOOP, LCT      /STALL 2.6 MICRO SECONDS
1360      1327 0374      -3-1
1361      1330 0073      ICT
1362      1331 0124      BR COFL F
1363      1332 1330      .-2
1364      1333 0064      LSP      /NOOP
1365      1334 0071      ESP      /NOOP
1366
1367      1335 0263      TOG FLAG      /WRITE A CLOCK TRANSITION IF WRT GATE IS SET
1368
1369      1336 0064      LSP      /PUT BIT COUNT IN THE COUNTER
1370      1337 0071      ESP
1371
1372      1340 0073      ICT      /INCREMENT BIT COUNT
1373
1374      1341 0075      LSR      /PUT UPDATED BIT COUNT BACK IN SR
1375
1376      1342 0124      BR COFL F      /DONE ALL BITS?
1377      1343 1326      LOOP      /NO
1378
1379      1344 0274      OPEN RTN      /YES, RETURN FROM SUBROUTINE
1380      1345 0207      JUMP IND F1
1381
1382
1383      1346 0222      PGOTIT, JUMP F4      /POINTER TO GETWORD FROM WAITRUN
1384      1347 0210      GOTIT
1385
1386
1387      /ROUTINE: INITIALIZE CONT.]
1388
1389      1350 0061      TEST2, FLAG OFF      /CLEAR FLAG TO INDICATE R10 IS BEING TESTED
1390
1391      1351 0070      TEST1, LCT      /LOOP TO TEST THAT SR IS 252 AND THAT
1392      1352 0372      -5-1      /IT CAN BE SHIFTED.
1393      1353 0120      TSTAGN, BR SR7 ZERO
1394      1354 1374      INTER1
1395      1355 0076      ROTATE ONE      /TEST FAILURE
1396      1356 0122      BR SR7 ONE

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1397	1357	1374	INTER1	/TEST FAILURE
1398	1360	0074	ROTATE ZERO	
1399	1361	0073	ICT	
1400	1362	0124	BR COFL F	
1401	1363	1353	TSTAGN	
1402				
1403	1364	0250	OPEN R10	/CONTENTS OF R10 TO SR, SHOULD BE 125
1404	1365	0071	ESP	
1405	1366	0075	LSR	
1406				
1407	1367	0074	ROTATE ZERO	/SHIFT SR ONCE TO CHANGE 125 TO 252
1408				
1409	1370	0176	BR FLAGO ONE	/HAS R10 BEEN TESTED ALREADY?
1410	1371	1350	TEST2	/NO
1411				
1412	1372	0202	TESTDN, JUMP F0	/YES, RETURN TO REMAINING INITIALIZE ROUTINE
1413	1373	0004	TSTRIN	
1414				
1415	1374	0006	INTER1, SET FRR	/SELF TEST ERROR, SET ERROR AND GO SET DONE
1416	1375	0212	JUMP F2	
1417	1376	1031	STDONE	
1418				
1419	1377	0000	0	/OPEN

1420			/[SUBROUTINE: FINDHEADER AND FIND DATA ADDRESS MARK]	
1421			/[SUBROUTINE TO LOCATE A LEGAL HEADER (CORRECT CRC AND TRACK #)	
1422			/[ENTER WITH THE RETURN ADDRESS IN CNTR, ALSO ROUTINE TO FIND A DATA MARK	
1423			/OR DELETED DATA MARK.	
1424				
1425				/THIS ROUTINE LOCATES A SIX BYTE PREAMBLE OF ZEROES.
1426				
1427				
1428	1400	0264	FINDHD, OPEN RTNB	/STORE RETURN ADDRESS
1429	1401	0075	LSR	
1430	1402	0064	LSP	
1431				
1432	1403	0230	OPEN TEMPA	/256 TO BAD START INNER COUNT
1433	1404	0070	LCT	
1434	1405	0377	-1	
1435	1406	0075	LSR	
1436	1407	0064	LSP	
1437				
1438	1410	0234	OPEN TEMPB	/3 TO CNTR FOR BAD START OUTER COUNT, 768 BAD STARTS ALLOWED
1439	1411	0070	LCT	
1440	1412	0374	-3-1	
1441				
1442	1413	0075	TRYAGN, LSR	/RESTORE BAD START COUNT
1443	1414	0064	LSP	
1444				
1445	1415	0045	CLR BAR LONG	/RESET FOR A COUNT OF 4096 AS PREAMBLE FAILURE COUNT
1446				
1447	1416	0240	OPEN TEMPC	/24 TO CNTR AS ZERO BIT COUNT
1448	1417	0070	LCT	
1449	1420	0347	-24-1	
1450	1421	0075	MORE0S, LSR	/RESTORE ZERO BIT COUNT
1451	1422	0064	LSP	
1452				
1453	1423	0070	LCT	/PUT 0 IN SR7 FOR DATA COMPARISONS, ALSO CONSTANT FOR 40 MICRO SEC WAIT CNA:
1454	1424	0067	-200-1	
1455	1425	0075	LSR	
1456				
1457	1426	0346	WBR SEPCLK T	/WAIT 40 MICRO SECONDS FOR SEP CLK
1458	1427	1432	.+3	
1459				
1460	1430	0216	JUMP F3	/ERROR, NO SEP CLK
1461	1431	1667	TIMERR	
1462				
1463	1432	0154	BR DEQSR7 F	/WHAT IS SEP DATA?
1464	1433	1746	NOZERO	/ONE, GO CHECK PREAMBLE FAILURES
1465				
1466	1434	0071	ESP	/ZERO FOUND, CHECK ZERO COUNT
1467	1435	0073	ICT	
1468	1436	0124	BR COFL F	
1469	1437	1421	MORE0S	/NEED MORE ZEROES FOR PREAMBLE
1470	1440	0061	FLAG OFF	/FOUND PREAMBLE, CLR FLAG TO INDICATE SEARCH FOR IDAM
1471				
1472	1441	0045	GETDAM, CLR BAR LONG	/START SEARCH FOR IDAM OR DATA AM, BAR IS NOSTART COUNTER
1473				
1474	1442	0070	LCT	/WAIT 40 MICRO SEC FOR SEP CLK

1475	1443	0067	-200-1	
1476	1444	0346	WBR SEPCLK T	
1477	1445	1450	.+3	
1478	1446	0216	JUMP F3	/TIMING ERROR
1479	1447	1667	TIMERR	
1480				
1481	1450	0156	BR DEQSR7 T	/WHAT IS SEP DATA?
1482	1451	1755	NOTYET	/ZERO, GO DETERMINE IF TO MANY STARTS
1483				
1484	1452	0164	BR MCEQSR F	/ONE, MISSING CLOCK?
1485	1453	1673	BADSRT	/YES, SHOULDN'T HAVE BEEN
1486				
1487	1454	0057	PRECRC	/JAM 1ST TWO BITS OF CRC
1488	1455	0056	CRC ONE	
1489	1456	0056	CRC ONE	
1490				
1491	1457	0070	LCT	/WAIT 40 MICRO SECONDS FOR SECOND CELL
1492	1460	0067	-200-1	
1493	1461	0346	WBR SEPCLK T	
1494	1462	1465	.+3	
1495	1463	0216	JUMP F3	
1496	1464	1667	TIMERR	
1497				
1498	1465	0156	BR DEQSR7 T	/DATA SHOULD BE 1, MISSING CLK SHOULD BE T
1499	1466	1673	BADSRT	
1500	1467	0166	BR MCEQSR T	
1501	1470	1673	BADSRT	
1502				
1503	1471	0056	CRC ONE	/JAM 3 MORE CRC BITS
1504	1472	0056	CRC ONE	
1505	1473	0056	CRC ONE	
1506				
1507	1474	0070	LCT	/WAIT FOR THIRD BIT CELL
1508	1475	0067	-200-1	
1509	1476	0346	WBR SEPCLK T	
1510	1477	1502	.+3	
1511	1500	0216	JUMP F3	
1512	1501	1667	TIMERR	
1513				
1514	1502	0154	BR DEQSR7 F	/DATA SHOULD BE 0, MISSING CLK SHOULD BE F
1515	1503	1673	BADSRT	
1516	1504	0164	BR MCEQSR F	
1517	1505	1673	BADSRT	
1518				
1519	1506	0070	LCT	/CLEAR SR
1520	1507	0000	J	
1521	1510	0075	LSR	
1522				
1523	1511	0070	LCT	/WAIT FOR 4TH BIT CELL
1524	1512	0067	-200-1	
1525	1513	0346	WBR SEPCLK T	
1526	1514	1517	.+3	
1527	1515	0216	JUMP F3	
1528	1516	1667	TIMERR	
1529				

1530	1517	0154	BR DEQSR7 F	/DATA SHOULD BE 0, MISSING CLK SHOULD BE F
1531	1520	1673	BADSRT	
1532	1521	0042	LDND	/NOOP FOR LONG SEP CLOCK
1533	1522	0042	LDND	/NOOP FOR LONG SEP CLOCK
1534	1523	0164	BR MCEQSR F	
1535	1524	1673	BADSRT	
1536				
1537	1525	0070	LCT	/WAIT FOR FIFTH BIT CELL
1538	1526	0067	-200-1	
1539	1527	0346	WBR SEPCLK T	
1540	1530	1533	.+3	
1541	1531	0216	JUMP F3	
1542	1532	1667	TIMERR	
1543				
1544	1533	0156	BR DEQSR7 T	/DATA SHOULD BE 1
1545	1534	1673	BADSRT	
1546				
1547	1535	0176	BR FLAGO T	/IF FLAG SET FINISH LOOKING FOR DATA AM
1548	1536	1675	DAM	
1549				
1550	1537	0164	BR MCEQSR F	/FINISH IDAM, MISSING CLK SHOULD BE F
1551	1540	1673	BADSRT	
1552				
1553	1541	0056	CRC ONE	/JAM 6TH CRC BIT OF IDAM
1554				
1555	1542	0070	LCT	/WAIT FOR SIXTH BIT CELL
1556	1543	0067	-200-1	
1557	1544	0346	WBR SEPCLK T	
1558	1545	1550	.+3	
1559	1546	0216	JUMP F3	
1560	1547	1667	TIMERR	
1561				
1562	1550	0156	BR DEQSR7 T	/DATA SHOULD BE 1, MISSING CLK SHOULD BE F
1563	1551	1673	BADSRT	
1564	1552	0164	BR MCEQSR F	
1565	1553	1673	BADSRT	
1566				
1567	1554	0042	LDND	/NOOP FOR LONG SEP CLOCK
1568				
1569	1555	0056	CRC ONE	/JAM 7TH CRC BIT OF IDAM
1570				
1571	1556	0070	LCT	/WAIT FOR SEVENTH BIT CELL
1572	1557	0067	-200-1	
1573	1560	0346	WBR SEPCLK T	
1574	1561	1564	.+3	
1575	1562	0216	JUMP F3	
1576	1563	1667	TIMERR	
1577				
1578	1564	0156	BR DEQSR7 T	/DATA SHOULD BE 1, MISSING CLK SHOULD BE T
1579	1565	1673	BADSRT	
1580	1566	0166	BR MCEQSR T	
1581	1567	1673	BADSRT	
1582				
1583	1570	0054	CRC ZERO	/IDAM FOUND, JAM LAST CRC BIT
1584				

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```

THIS ROUTINE COMPARES THE HEADER TRACK ADDRESS TO THE
DESIRED TRACK ADDRESS ON THE FLY. IT IS ENTERED AFTER
FINDING THE IDAM, ERREG BIT 0 IS SET IF AN ERROR IS DETECTED.

```
1571 0220  MORCOM, OPEN TARTRK  /TARGET TRACK ADDRESS TO SR
1572 0071      ESP
1573 0075      LSR
1574 0070      LCT  /SET BIT COUNTER TO 8
1575 0367      -8-1
1576 0144  AGAIN3, BR SEPCLK F  /WAIT FOR BIT CELL
1577 1576      .-1
1600 0156      BR DEQSR7 T  /SEP DATA EQUAL TO SR??
1601 1605      .+4  /NO, TRACK COMPARE ERROR
1602 0074      ROTATE ZERO  /YES, GET NEXT TRACK ADDRESS BIT
1603 0216      JUMP F3
1604 1610      .+4
1605 0210      OPEN ERREG  /SET ERREG BIT 0 TO INDICATE TRACK ERROR
1606 0076      ROTATE ONE
1607 0064      LSP
1610 0055      DATCRC  /UPDATE THE CRC
1611 0073      ICT  /INCREMENT AND TEST THE BIT COUNTER
1612 0124      BR COFL F
1613 1576      AGAIN3  /GO DO NEXT BIT
1614 0070      LCT  /TRACK COMPARED, SET UP BIT COUNTER FOR 8 BYTE
1615 0367      -8-1
1616 0144  AGAIN4, BR SEPCLK F  /WAIT FOR BIT
1617 1616      .-1
1620 0061      FLAG OFF  /CLEAR FLAG FOR NEXT ROUTINE
1621 0061      FLAG OFF  /NOOP FOR LONG SEP CLK
1622 0061      FLAG OFF  /NOOP FOR LONG SEP CLK
1623 0061      FLAG OFF  /NOOP FOR LONG SEP CLK
1624 0055      DATCRC  /UPDATE CRC
1625 0073      ICT  /INCREMENT AND TEST BIT COUNT
1626 0124      BR COFL F
1627 1616      AGAIN4  /GO DO ANOTHER BIT
/CONTINUE
```

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```

THIS ROUTINE COMPARES THE HEADER SECTOR ADDRESS WITH THE
TARGET SECTOR ADDRESS ON THE FLY. IT IS ENTERED FROM
THE TRACK COMPARE ROUTINE. A MISMATCH WILL SET THE FLAG.

```
1630 0224  OPEN TARSEC  /TARGET SECTOR ADDRESS TO SR
1631 0271      ESP
1632 0075      LSR
1633 0070      LCT  /SET UP BIT COUNTER FOR 8 BITS
1634 0367      -8-1
1635 0144  AGAIN5, BR SEPCLK F  /WAIT FOR A BIT
1636 1635      .-1
1637 0156      BR DEQSR7 T  /HOW DO THEY COMPARE?
1638 1643      .+3  /BAD, GO SET THE FLAG
1641 0216      JUMP F3  /GOOD, SKIP THE ERROR FLAG.
1642 1644      .+2
1643 0062      FLAG ON  /SET FLAG TO INDICATE MISMATCH
1644 0074      ROTATE ZERO  /BRING UP NEXT BIT
1645 0055      DATCRC  /UPDATE THE CRC
1646 0073      ICT  /BUMP THE BIT COUNTER
1647 0124      BR COFL F  /ALL BITS COMPARED?
1648 1635      AGAIN5  /NO, LOOP BACK
1649 0070      LCT  /YES, SETUP TO WAIT FOR END OF
1650 0347      -24-1  /CRC
1653 0144  AGAIN6, BR SEPCLK F  /WAIT FOR BIT
1654 1653      .-1
1655 0074      ROTATE ZERO  /NOOP FOR LONG SEP CLK
1656 0074      ROTATE ZERO  /NOOP FOR LONG SEP CLK
1657 0074      ROTATE ZERO  /NOOP FOR LONG SEP CLK
1658 0074      ROTATE ZERO  /NOOP FOR LONG SEP CLK
1661 0055      DATCRC  /UPDATE CRC
1662 0073      ICT  /BUMP THE BIT COUNTER
1663 0124      BR COFL F  /ALL DONE?
1664 1653      AGAIN6  /NO, LOOP BACK
1665 0226      JUMP F5  /YES, GO CHECK IF CRC IS ALL ZEROES
1666 2515      CKHCRC
1667 0070      TIMERR, LCT  /40 MICROSEC PASSED AND NO SEP CLOCK WAS SEEN
1670 0110      KTIMERR
1671 0226      JUMP F5
1672 2610      GOERDN
```

1695				
1696				
1697	1673	0226	BADSRT, JUMP F5	/POINTER TO BADSTART ON IDAM OR DATA AM
1698	1674	2555	BDSRT	
1699				
1700				
1701				
1702				
1703				
1704				
1705				
1706				
1707				
1708	1675	0166	DAM, BR MCEQSR T	/MISSING CLK SHOULD BE T
1709	1676	1673	BAQSR	
1710				
1711	1677	0054	CRC ZERO	/JAM 6TH CRC BIT OF DATA AM
1712				
1713	1700	0070	LCT	/WAIT FOR SIXTH BIT CELL
1714	1701	0067	-200-1	
1715	1702	0346	WBR SEPCLK T	
1716	1703	1706	+.3	
1717	1704	0216	JUMP F3	
1718	1705	1667	TIMERR	
1719				
1720	1706	0164	BR MCEQSR F	/MISSING CLK SHOULD BE F
1721	1707	1673	BAQSR	
1722	1710	0042	LDHD	/NOOP FOR LONG SEP CLK
1723				
1724	1711	0156	BR DEQSR7 T	/IF DATA=0 THEN LOOK FOR DELETED DATA AM
1725	1712	1727	DELDT	
1726				
1727	1713	0056	CRC ONE	/JAM 7TH BIT OF DATA AM
1728				
1729	1714	0070	LCT	/WAIT FOR SEVENTH BIT OF DATA AM
1730	1715	0067	-200-1	
1731	1716	0346	WBR SEPCLK T	
1732	1717	1722	+.3	
1733	1720	0216	JUMP F3	
1734	1721	1667	TIMERR	
1735				
1736	1722	0056	CRC ONE	/JAM LAST BIT OF DATA AM
1737				
1738	1723	0154	BR DEQSR7 F	/DATA SHOULD BE 1
1739	1724	1742	ENDDAM	/FLAG IS SET TO INDICATE NORMAL DATA MARK
1740				
1741	1725	0216	JUMP F3	/LAST DATA BIT WAS BAD
1742	1726	1673	BADSRT	
1743				
1744				
1745	1727	0054	DELDT, CRC ZERO	/JAM 7TH CRC BIT OF DEL DATA AM
1746				
1747	1730	0070	LCT	/WAIT FOR 7TH CELL OF DEL DATA AM
1748	1731	0067	-200-1	
1749	1732	0346	WBR SEPCLK T	

1750	1733	1736	+.3	
1751	1734	0216	JUMP F3	
1752	1735	1667	TIMERR	
1753				
1754	1736	0061	FLAG OFF	/CLR FLAG TO INDICATE DELETED DATA MARK
1755				
1756	1737	0054	CRC ZERO	/JAM LAST CRC BIT OF DEL DATA AM
1757				
1758	1740	0154	BR DEQSR7 F	/DATA SHOULD BE 0
1759	1741	1673	BADSRT	
1760				
1761	1742	0164	ENDDAM, BR MCEQSR F	/MISSING CLK SHOULD BE F FOR BOTH DATA AMS
1762	1743	1673	BADSRT	
1763				
1764	1744	0222	JUMP F4	/GO PICK UP DATA FIELD
1765	1745	2206	DATA	
1766				
1767				
1768	1746	0046	NOZERO, INCR BAR	/INCREMENT AND TEST PREAMBLE FAILURE COUNT
1769	1747	0160	BR BAROFL F	
1770	1750	1416	TRYAGN+3	/OK, TRY AGAIN FOR A PREAMBLE
1771				
1772	1751	0070	NXPAM, LCT	/TOO MANY BITS WITH NO ZEROES
1773	1752	0120	KNXPAM	
1774	1753	0226	JUMP F5	
1775	1754	2610	GOERDN	
1776				
1777				
1778	1755	0046	NOTYET, INCR BAR	/INCR AND TEST IDAM OR DATA AM START FAILURE COUNT
1779	1756	0042	LDHD	/NOOP FOR LONG SEP CLK
1780	1757	0160	BR BAROFL F	
1781	1760	1442	GETDAM+1	/OK, TRY AGAIN
1782				
1783	1761	0070	NXIDAM, LCT	/TOO MANY ZEROES WHILE LOOKING FOR START OF
1784	1762	0130	KNXIDAM	/IDAM OR DATA AM
1785	1763	0226	JUMP F5	
1786	1764	2610	GOERDN	
1787				
1788				
1789	1765	0212	PNTRY, JUMP F2	/POINTERS FROM CHECKROY SUBROUTINE TO ROSTAT ROUTINE
1790	1766	1243	CLRID	
1791	1767	0212	PYSRDY, JUMP F2	
1792	1770	1243	CLRID	
1793				
1794	1771	0212	PNORDY, JUMP F2	/POINTERS FROM CHECK ROY TO INITIALIZE ROUTINE
1795	1772	1006	OKDONE	
1796	1773	0226	JUMP F5	
1797	1774	2631	INTROY	
1798				
1799	1775	0000	0	/OPEN
1800	1776	0000	0	/OPEN
1801	1777	0000	0	/OPEN
1802				


```

1803      /SUBROUTINES: GETWORD AND GETCOMMAND1
1804      /SUBROUTINE TO GET AN EIGHT BIT WORD FROM THE INTERFACE.
1805      /IF TALKING TO A PDP8 INTERFACE IN 12 BIT MODE, THERE
1806      /WILL BE FOUR MEANINGLESS BITS PRECEDING THE DESIRED EIGHT
1807      /BIT WORD, ENTER THIS SUBROUTINE WITH THE RETURN ADDRESS
1808      /IN THE COUNTER, EXIT WITH THE ONES COMPLIMENT OF THE
1809      /DESIRED WORD IN THE SHIFT REGISTER, PARITY IS COMPUTED AND
1810      /CHECKED ON ALL WORDS.
1811
1812
1813      2000 0012  GETWRD, SET XREQ      /REQUEST A WORD FROM INTERFACE
1814
1815      2001 0075  GETCMD, LSR          /STASH THE RETURN ADDRESS
1816      2002 0270      OPEN RTNA
1817      2003 0064      LSP
1818
1819      2004 2070      LCT              /CALL SUBR WAITRN TO WAIT FOR A WORD
1820      2005 1346      PGOTIT
1821      2006 0222      JUMP F4
1822      2007 2312      WAITRN
1823
1824      2010 0061  GOTIT, OFF FLAG      /CLEAR FLAG FOR PARITY CHECK
1825
1826      2011 0004      CLR ERR          /IN CASE RUN WAS A RESPONSE TO DONE
1827      2012 0020      CLR DONE
1828
1829      2013 0070      LCT              /SET UP BIT COUNT IN CNTR. 8 BIT OR 12 BIT
1830      2014 0367      =8-1
1831      2015 0150      BR XIIBIT F
1832      2016 2021      ,+3
1833      2017 0070      LCT
1834      2020 0363      =12-1
1835
1836      2021 0112  WATOAT, BR DATAIN ONE /WHAT IS THE DATA BIT?
1837      2022 2030  GOTONE              /ITS A ONE, GO SAVE IT
1838
1839      2023 0126      BR COFL T        /ITS A ZERO, WAS IT THE PARITY BIT (9TH BIT)?
1840      2024 2041  CHKPAR              /YES, GO CHECK PARITY
1841
1842      2025 0076      ROTATE ONE       /NO SAVE THE DATA BIT COMPLIMENTED IN SR
1843
1844      2026 0222      JUMP F4          /GO SHIFT UP ANOTHER BIT.
1845      2027 2034      NUTHER
1846
1847
1848
1849
1850      2030 0063  GOTONE, TOG FLAG      /COMPLIMENT THE PARITY GENERATOR
1851
1852      2031 0126      BR COFL T        /WAS IT THE PARITY BIT?
1853      2032 2041  CHKPAR              /YES, GO CHECK PARITY
1854
1855      2033 0074      ROTATE ZERO      /NO, SAVE THE COMPLIMENTED DATA BIT IN SR
1856
1857      2034 0026  NUTHER, SET SHIFT    /SHIFT PULSE AND INCREMENT BIT COUNT
    
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1858      2035 0073  ICT
1859      2036 0024      CLR SHIFT
1860
1861      2037 0222      JUMP F4          /GO TEST THIS BIT.
1862      2040 2021      WATDAT
1863
1864
1865      2041 0176  CHKPAR, BR FLAGO ONE /WHERE THERE AN ODD NO. OF ONES?
1866      2042 2076  GOTWRD              /YES, PARITY WAS GOOD
1867
1868      2043 0214      OPEN STAT        /NO, STAT TO SR
1869      2044 0071      ESP
1870      2045 0075      LSR
1871
1872      2046 0070      LCT              /END AROUND SHIFT OF UPPER 5 BITS OF STAT IN SR
1873      2047 0372      =5-1
1874      2050 0122      BR SR7 T
1875      2051 2055      ,+4
1876      2052 0074      ROTATE ZERO
1877      2053 0222      JUMP F4
1878      2054 2056      ,+2
1879      2055 0076      ROTATE ONE
1880      2056 0073  ICT
1881      2057 0124      BR COFL F
1882      2060 2050      ,=8
1883
1884      2061 0074      ROTATE ZERO      /CLEAR INIT DONE
1885      2062 0076      ROTATE ONE      /SET PARITY ERROR
1886
1887      2063 0122      BR SR7 T        /END AROUND SHIFT OF CRC ERROR BIT OF STAT IN SR
1888      2064 2070      ,+4
1889      2065 0074      ROTATE ZERO
1890      2066 0222      JUMP F4
1891      2067 2071      ,+2
1892      2070 0076      ROTATE ONE
1893
1894      2071 0064      LSP              /RESTORE STAT TO SCRATCH PAD
1895
1896      2072 0070      LCT              /ERRCODE FOR PARITY ERROR
1897      2073 0210      KPARER
1898      2074 0226      JUMP F5
1899      2075 2610      GOERON
1900
1901      2076 0270  GOTWRD, OPEN RTNA    /WORD WAS GOOD, EXIT FROM GETWRD, GETCMD
1902      2077 0203      JUMP F0 IND
    
```

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1903
1904      /SUBROUTINE: STEPHEAD]
1905      /THIS SUBROUTINE WILL STEP THE SPECIFIED NUMBER OF TRACKS IN THE
1906      /SPECIFIED DIRECTION. DIRECTION IS DETERMINED BY THE HD DIR FLOP
1907
1908      /THE NUMBER OF STEPS IS IN THE SR. RETURN ADDRESS IS IN THE CNTR.
1909      /EXIT IS TO THE RETURN ADDRESS IF HOME IS DETECTED. EXIT IS TO RETURN
1910      /PLUS 2 IF THE LAST STEP HAS BEEN TAKEN. AFTER THE LAST STEP IS TAKEN,
1911      /THE HEAD IS LOADED AND A 25MS DELAY IS EXECUTED FOR HEAD SETTLE TIME
1912
1913
1914
1915
1916      2100 0270      STEPHD, OPEN RTNA      /STORE RETURN ADDR AND MDVE STEP COUNT TO CNTR
1917      2101 0064      LSR
1918      2102 0075      LSR
1919      2103 0071      ESP
1920      2104 0064      LSP
1921
1922      2105 0136      CKHOME, BR HOME T      /IS THE HEAD HOME?
1923      2106 2150      OUT                    /YES, GO EXIT
1924
1925      2107 0073      ICT                    /NO, INCREMENT STEP COUNT AND STORE IN TEMPA
1926      2110 0075      LSR
1927      2111 0230      OPEN TEMPA
1928      2112 0064      LSP
1929
1930      2113 0270      LCT                    /PASS 30 TO DELAY SUBR FOR 3MS DELAY
1931      2114 2124      SECPLS
1932      2115 0075      LSR
1933      2116 0070      LCT
1934      2117 0341      -30-1
1935
1936      2120 0012      SET STPHD              /ISSUE STEP PULSE
1937      2121 0010      CLR STPHD
1938
1939      2122 0212      JUMP F2                /CALL DELAY SUBR
1940      2123 1300      DELAY
1941
1942      2124 0012      SECPLS, SET STPHD      /ISSUE SECOND STEP PULSE
1943      2125 0010      CLR STPHD
1944
1945      2126 0270      LCT                    /CALL DELAY FOR 3MS DELAY
1946      2127 2135      DONSTP
1947      2130 0075      LSR
1948      2131 0270      LCT
1949      2132 0341      -30-1
1950      2133 0212      JUMP F2
1951      2134 1300      DELAY
1952
1953      2135 0230      DONSTP, OPEN TEMPA     /CHECK STEP COUNT
1954      2136 0071      ESP
1955      2137 0124      BR COFL F
1956      2140 2105      CKHOME                /NOT DONE, GO CHECK IF HOME
1957
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1958      2141 0270      OPEN RTNA          /DONE STEPPING, INCREMENT RETURN ADDRESS BY 2
1959      2142 0071      ESP
1960      2143 0073      ICT
1961      2144 0073      ICT
1962
1963      2145 0270      DLY25, OPEN RTNA      /STORE RETURN ADDRESS ALSO START OF 25MS DELAY SUBROUTINE
1964      2146 0075      LSR
1965      2147 0064      LSP
1966
1967      2150 0042      OUT, LDHD              /LOAD HEAD
1968      2151 0250      OPEN TEMPE          /SET SOFT HD LOAD BIT
1969      2152 0070      LCT
1970      OCTAL
1971      2153 0200      200
1972      DECIMAL
1973      2154 0075      LSR
1974      2155 0064      LSP
1975
1976      2156 0270      LCT                    /CALL DELAY SUBR FOR 25MS DELAY
1977      2157 2165      DONDLY
1978      2160 0075      LSR
1979      2161 0070      LCT
1980      2162 0000      -255-1
1981      2163 0212      JUMP F2
1982      2164 1300      DELAY
1983
1984      2165 0270      DONDLY, OPEN RTNA     /RETURN FROM STEP HEAD OR DELAY 25MS SUBROUTINE
1985      2166 0203      JUMP F0 IND
1986
1987
1988
1989
1990
1991
1992
1993      /ROUTINE: READ SECTOR CONT.]
1994
1995      2167 0070      READ, LCT              /3 TO DATA MARK TRY COUNTER
1996      2170 0374      -3-1
1997      2171 0234      OPEN TEMPB
1998      2172 0075      LSR
1999      2173 0064      LSP
2000
2001      2174 0070      LCT                    /STALL FOR 96 MICRO SEC (3 BYTES) TO AVOID WRT TURN ON SPLASH
2002      2175 0207      -120-1
2003      2176 0073      ICT
2004      2177 0062      FLAG ON              /SET THE FLAG TO SPECIFY DATA AM IN FIND AM ROUTINE
2005      2200 0124      BR COFL F
2006      2201 2176      -3
2007
2008      2202 0073      ICT                    /CLR COUNTER AND SR
2009      2203 0075      LSR
2010
2011      2204 0216      JUMP F3                /GO TRY FIND THE ADDRESS MARK
2012      2205 1441      GETDAM
```

```
2013
2014
2015 /THIS ROUTINE FOLLOWS THE DISCOVERY OF A DATA MARK OR
2016 /A DELETED DATA MARK. IT MOVES THE NEXT 1024 BITS
2017 /INTO THE SECTOR BUFFER, THEN PICKS UP AND CHECKS THE CRC.
2018
2019 2206 0044 DATA, CLR BAR /CLEAR THE BUFFER ADDRESS REGISTER
2020
2021 2207 0144 BR SEPCLK F /WAIT FOR CLOCK
2022 2210 2207 .-1
2023
2024 2211 0053 START WRTBUF /START THE WRITE PULSE FOR THIS BIT
2025
2026 2212 0055 DATCRC /UPDATE THE CRC WITH SEP DATA
2027
2028 2213 0162 BR BAROFL T /IS BUFFER FULL YET?
2029 2214 2221 GETCRC /YES, GO GET THE CRC
2030
2031 2215 0050 FIN WRTBUF /NO, END THE WRITE PULSE
2032
2033 2216 0046 INCR BAR /ADDRESS NEXT SECTOR BUFFER CELL
2034
2035 2217 0222 JUMP F4 /LOOP BACK FOR NEXT BIT
2036 2220 2207 DATA+1
2037
2038 2221 0050 GETCRC, FIN WRTBUF /END THE WRITE PULSE FOR THE LAST BIT
2039
2040 2222 0070 LCT /SET BIT COUNT TO 16 FOR 2 BYTE CRC
2041 2223 0357 -16-1
2042
2043 2224 0144 BR SEPCLK F /WAIT FOR NEXT BIT
2044 2225 2224 .-1
2045
2046 2226 0042 LDHD /4 NOOPS FOR LONG SEP CLOCK
2047 2227 0042 LDHD
2048 2230 0042 LDHD
2049 2231 0042 LDHD
2050
2051 2232 0055 DATCRC /PUT CRC BIT IN THE CRC GENERATOR
2052 2233 0073 ICT /INCREMENT AND TEST BIT COUNT
2053 2234 0124 BR COFL F
2054 2235 2224 .-9 /NOT DONE, GET ANOTHER
2055
2056 2236 0214 OPEN STAT /STATUS TO SHIFT REG
2057 2237 0071 ESP
2058 2240 0075 LSR
2059
2060 2241 0122 BR SR7 T /END AROUND SHIFT OF DRV RDY BIT OF STAT IN SR
2061 2242 2246 .+4
2062 2243 0074 ROTATE ZERO
2063 2244 0222 JUMP F4
2064 2245 2247 .+2
2065 2246 0076 ROTATE ONE
2066
2067 2247 0176 BR FLAG0 T /SET DEL DATA BIT OF STAT IF FLAG=0
```

```
2068 2250 2254 .+4
2069 2251 0076 ROTATE ONE
2070 2252 0222 JUMP F4
2071 2253 2255 .+2
2072 2254 0074 ROTATE ZERO
2073
2074 2255 0070 LCT /END AROUND SHIFT OF NEXT 5 BITS OF STAT IN SR
2075 2256 0372 -5-1
2076 2257 0122 BR SR7 T
2077 2260 2264 .+4
2078 2261 0074 ROTATE ZERO
2079 2262 0222 JUMP F4
2080 2263 2265 .+2
2081 2264 0076 ROTATE ONE
2082 2265 0073 ICT
2083 2266 0124 BR COFL F
2084 2267 2257 .-8
2085
2086 2270 0070 LCT /SET BIT COUNTER TO 16 FOR CRC TEST
2087 2271 0357 -16-1
2088
2089 2272 0132 BR CRC16 ONE /IS THIS CRC BIT OK
2090 2273 2304 DCR CER /NO, GO REPORT DATA CRC ERROR
2091
2092 2274 0054 CRC ZERO /YES, BRING UP NEXT CRC BIT
2093
2094 2275 0073 ICT /INCREMENT AND TEST BIT COUNTER
2095 2276 0124 BR COFL F
2096 2277 2272 .-5 /GO CHECK ANOTHER
2097
2098 2300 0074 ROTATE ZERO /CRC WAS GOOD, CLR CRC ERR BIT OF STAT IN SR
2099
2100 2301 0064 LSP /PUT THE STATUS WORD BACK IN SCRATCHPAD
2101
2102 2302 0212 JUMP F2 /EXIT TO DONE
2103 2303 1006 OKDONE
2104
2105 2304 0076 DCR CER, ROTATE ONE /INSERT 1 INTO CRC ERROR BIT
2106
2107 2305 0064 LSP /PUT THE STAT WORD BACK
2108
2109 2306 0070 LCT /ERROR CODE FOR CRC ERROR
2110 2307 0200 KDCR CER
2111 2310 0226 JUMP F5
2112 2311 2610 GOERDN
```

```
2113      /([SUBROUTINE: WAIT FOR RUN])
2114      /THIS SUBROUTINE WILL WAIT FOR RUN. IF 46MS ELAPSES, THE HEAD IS UNLOADED
2115      /AND THE ROUTINE CONTINUES WAITING FOR RUN. RETURN ADDRESS IS PASSED
2116      /VIA THE COUNTER
2117
2118
2119      2312 0264 WAITRN, OPEN RTNB      /STASH THE RETURN ADDRESS
2120      2313 0075 LSR
2121      2314 0064 LSP
2122
2123      2315 0102 BR RUN T      /GOT RUN?
2124      2316 2347 GOTRUN
2125
2126      2317 0240 OPEN TEMPC      /PRESET LOOP COUNTER TO 0
2127      2320 0070 LCT
2128      2321 0000 R
2129
2130      2322 0075 BACK, LSR      /RESTORE LOOP COUNT
2131      2323 0064 LSP
2132
2133      2324 0302 WBR RUN T      /TIME WHILE WAITING FOR FUN
2134      2325 2347 GOTRUN
2135      2326 0302 WBR RUN T
2136      2327 2347 GOTRUN
2137      2328 0302 WBR RUN T
2138      2331 2347 GOTRUN
2139      2332 0302 WBR RUN T
2140      2333 2347 GOTRUN
2141
2142      2334 0071 ESP      /INCREMENT AND TEST LOOP COUNT
2143      2335 0073 ICT
2144      2336 0124 BR COFL F
2145      2337 2322 BACK      /46MS NOT ELAPSED YET
2146
2147      2340 0250 OPEN TEMPE      /TIME IS EXPIRED (45.8 MS), CLEAR THE SOFT HDLD BIT AND UNLOAD THE HEAD
2148      2341 0273 ICT
2149      2342 0075 LSR
2150      2343 0064 LSP
2151      2344 0040 UNHD
2152
2153      2345 0100 BR RUN F      /WAIT FOR RUN, FOREVER IF NECESSARY
2154      2346 2345 .-1
2155
2156      2347 0010 GOTRUN, CLR XREQ      /IF RUN WAS RESPONSE TO XFREQ
2157
2158      2350 0264 OPEN RTNB      /RETURN FROM WAITRN SUBROUTINE
2159      2351 0213 JUMP INO F2
2160
2161
```

```
2162      /([ROUTINE: INITIALIZE CONT.])
2163      /CONTINUATION OF THE INITIALIZE SELF TEST
2164
2165      2352 0070 TEST, LCT      /LOAD R5 WITH TEST PATTERN 252
2166      2353 0252 OCTAL
2167      2354 0075 252
2168      2355 0224 DECIMAL
2169      2356 0064 LSR
2170      2357 0075 OPEN R5
2171      2358 0064 LSP
2172
2173      2359 0270 LCT      /LOAD R10 WITH TEST PATTERN 125
2174      2360 0125 OCTAL
2175      2361 0075 125
2176      2362 0252 DECIMAL
2177      2363 0075 LSR
2178      2364 0252 OPEN R10
2179      2365 0064 LSP
2180
2181      2366 0062 FLAG ON      /SET FLAG AND TEST IT
2182      2367 0176 BR FLAGO T
2183      2368 2371 .+3
2184      2369 0212 JUMP F2
2185      2370 1374 INTER1      /FLAG FAILURE
2186
2187      2371 0224 OPEN R5      /CONTENTS OF R5 TO SR, SHOULD BE 252
2188      2372 0071 ESP
2189      2373 0275 LSR
2190
2191      2374 0212 JUMP F2      /GO CONTINUE INIT TEST IN FLD 2
2192      2375 1351 TEST1
2193
2194
2195      2376 0000 0      /OPEN
2196      2377 0000 0      /OPEN
```

```

2197      /([SUBROUTINE: MAGNITUDE COMPARISON])
2198      /THIS SUBROUTINE COMPARES THE EIGHT BIT NUMBERS IN REGISTERS F AND G
2199      / EXIT IS TO THE RETURN ADDRESS IF F=G, IF F<G, RETURN IS TO RTNA+2.
2200      /IF F>G, RETURN IS TO RTNA+4. CONTENTS OF F AND G ARE UNDEFINED AT
2201      /THE END OF THE SUBROUTINE
2202
2203
2204
2205
2206      2400 0230      MAGCOM, OPEN TEMPA      /FOR BIT COUNT
2207
2208      2401 0070      LCT                      /BIT COUNT IS 8
2209      2402 0367      -8-1
2210
2211      2403 0075      LSR                      /RESTORE BIT COUNT
2212      2404 0064      LSP
2213
2214      2405 0254      OPEN TEMPF              /F TO SR
2215      2406 0071      ESP
2216      2407 0075      LSR
2217
2218      2410 0120      BR SR7 ZERO              /TEST F
2219      2411 2443      TSTG0                    /ITS 0
2220
2221      2412 0076      ROTATE ONE              /ITS 1, BRING UP NEXT BIT
2222
2223      2413 0064      LSP                      /RESTORE F
2224
2225      2414 0260      OPEN TEMPG              /G TO SR
2226      2415 0071      ESP
2227      2416 0075      LSR
2228
2229      2417 0120      BR SR7 ZERO              /TEST G
2230      2420 2432      GLESSF                    /ITS 0, G IS LESS THAN F
2231
2232      2421 0074      NEXTG, ROTATE ZERO        /ITS 1, BRING UP NEXT G BIT
2233
2234      2422 0064      LSP                      /RESTORE G
2235
2236      2423 0230      OPEN TEMPA              /INCREMENT AND TEST BIT COUNT
2237      2424 0071      ESP
2238      2425 0073      ICT
2239      2426 0124      BR COFL F
2240      2427 2403      MAGCOM+3                /GO COMPARE ANOTHER BIT
2241
2242      2430 0270      OPEN RTNA                /ALL BITS COMPARED, NO DIFFERENCE
2243      2431 0203      JUMP F0 IND
2244
2245      2432 0270      GLESSF, OPEN RTNA        /G IS LESS THAN F RETURN TO RTNA +4
2246      2433 0071      ESP
2247      2434 0073      ICT
2248      2435 0073      ICT
2249      2436 0073      ICT
2250      2437 0073      ICT
2251      2440 0075      LSR

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2252      2441 0064      LSP
2253      2442 0203      JUMP F0 IND
2254
2255      2443 0074      TSTG2, ROTATE ZERO      /F HAS 0, BRING UP NEXT BIT
2256
2257      2444 0064      LSP                      /RESTORE F
2258
2259      2445 0260      OPEN TEMPG              /G TO SR
2260      2446 0071      ESP
2261      2447 0075      LSR
2262
2263      2450 0120      BR SR7 ZERO              /TEST G
2264      2451 2421      NEXTG                    /MATCHES F, GO BRING UP NEXT G BIT
2265
2266      2452 0270      OPEN RTNA                /G IS LESS THAN F. RETURN TO RTNA +2
2267      2453 0071      ESP
2268      2454 0226      JUMP F5
2269      2455 2436      GLESSF+4
2270
2271
2272
2273      /([SUBROUTINE: FIND TRACK CONT.])
2274
2275      2456 0070      HOMERR, LCT                /MORE FOUND BEFORE LAST STEP TAKEN
2276      2457 0050      KHOMEERR
2277      2460 0226      JUMP F5
2278      2461 2610      GOERON
2279
2280
2281      /([SUBROUTINE: DIFFERENCE])
2282      /THIS SUBROUTINE COMPUTES THE DIFFERENCE BETWEEN TWO EIGHT BIT
2283      /NUMBERS. ENTER WITH THE RETURN ADDRESS IN RTN, A IN THE
2284      /COUNTER AND B IN THE SHIFT REGISTER. EXIT IS MADE WITH THE
2285      /COMPLIMENT OF THE DIFFERENCE IN THE SHIFT REGISTER.
2286      /EXIT IS TO RTN IF A>=B, EXIT IS TO RTN+2 IF A<B
2287
2288
2289
2290
2291      2462 0230      OIF, OPEN TEMPA            /OPEN TEMPORARY PATH THRU THE SP
2292
2293      2463 0126      BR COFL T                /HAS A REACHED ALL ONES YET?
2294      2464 2501      DIFB                      /YES, GO GET B FOR THE DIFFERENCE
2295
2296      2465 0064      LSP                      /NO, GET B
2297      2466 0075      LSR                      /A INTO SHIFT REG
2298      2467 0071      ESP                      /B INTO COUNTER
2299
2300      2470 0126      BR COFL T                /HAS B REACHED ALL ONES YET?
2301      2471 2503      DIFA                      /YES, GO GET A FOR THE DIFFERENCE
2302
2303      2472 0073      ICT                      /INCREMENT B
2304      2473 0064      LSP                      /, BRING BACK A
2305      2474 0075      LSR                      /B INTO SHIFT REG
2306      2475 0071      ESP                      /A INTO COUNTER

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0      /RX01 FLOPPY CONTROLLER FIRMWARE      PAL10  V142A  9-FEB-76      9117  PAGE 15-2
0      2307  2476  0073      ICT      /INCREMENT A
0      2308  2477  0226      JUMP F5      /GO BACK TO TEST A AGAIN
0      2309  2502  2463      DIF+1
0      2310
0      2311
0      2312  2501  0273      DIFB,  OPEN RTNA      /B IS THE COMPLIMENT OF THE DIFFERENCE
0      2313  2502  0203      JUMP F0 IND      /EXIT A>=9
0      2314
0      2315
0      2316  2503  0270      DIFA,  OPEN RTNA      /A IS THE COMPLIMENT OF THE DIFFERENCE
0      2317  2504  0071      ESP      /INCREMENT THE RETURN ADDRESS BY 2
0      2318  2505  0073      ICT
0      2319  2506  0273      ICT
0      2320
0      2321  2507  0064      LSP      /RESTORE RETURN ADDRESS TO SCRATCHPAD AND A TO CR
0      2322  2510  0275      LSR
0      2323  2511  0271      ESP
0      2324  2512  0064      LSP
0      2325  2513  0075      LSR
0      2326
0      2327  2514  0203      JUMP F0 IND      /EXIT A<B
0      2328
0      2329
0      2330      /ROUTINE1 FIND HEADER CONT.1
0      2331      /THIS ROUTINE CHECKS THE CRC, AND THE RESULTS OF THE TRACK
0      2332
0      2333      /AND SECTOR COMPARISONS.
0      2334
0      2335
0      2336
0      2337
0      2338  2515  0070      CKMCRC, LCT      /PRESET BIT COUNT TO 16 FOR CRC
0      2339  2516  0357      -16-1
0      2340
0      2341  2517  0132      BR CRC16 ONE      /IS CRC ZERO
0      2342  2520  2546      HRCER      /NO, LOG ERROR AND TRY AGAIN
0      2343
0      2344  2521  0073      ICT      /YES, CRC GOOD SO FAR, BUMP BIT CNTR
0      2345
0      2346  2522  0254      CRC ZERO      /BRING UP NEXT CRC BIT
0      2347
0      2348  2523  0124      BR COFL F      /ALL BITS TESTED?
0      2349  2524  2517      -5      /NO, BRANCH BACK
0      2350
0      2351  2525  0210      OPEN ERREG      /YES, CRC WAS GOOD, CHECK TRK COMP
0      2352  2526  0071      ESP
0      2353  2527  0075      LSR
0      2354
0      2355  2530  0070      LCT      /ROTATE BIT 0 TO BIT 7
0      2356  2531  0370      -7-1
0      2357  2532  0074      ROTATE ZERO
0      2358  2533  0073      ICT
0      2359  2534  0124      BR COFL F      /DONE ROTATING?
0      2360  2535  2532      -3      /NO
0      2361

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0      /RX01 FLOPPY CONTROLLER FIRMWARE      PAL10  V142A  9-FEB-76      9117  PAGE 15-3
0      2362  2536  0122      BR SR7 ONE      /YES, WAS THERE A BAD COMPARE
0      2363  2537  2542      TSKER      /YES, GO REPORT A TRACK SEEK ERROR
0      2364
0      2365  2540  0264      OPEN RTNR      /CORRECT TRACK, EXIT FROM FIND HDR SUBR
0      2366  2541  0207      JUMP F1 IND
0      2367
0      2368
0      2369
0      2370
0      2371  2542  0070      TSKER, LCT      /HEADER CRC WAS GOOD BUT TRACK
0      2372  2543  0150      KTKSKER      /ADDRESS DID NOT COMPARE, MUST
0      2373  2544  0226      JUMP F5      /EXIT TO ERROR DONE
0      2374  2545  2610      GOERDN
0      2375
0      2376
0      2377  2546  0070      HRCER, LCT      /HEADER CRC WAS NOT CORRECT
0      2378  2547  0140      KHRCER
0      2379  2550  0075      LSR
0      2380  2551  0210      OPEN ERREG      /LOG THE ERROR
0      2381  2552  0064      LSP
0      2382
0      2383  2553  0226      JUMP F5      /GO TRY ANOTHER HEADER
0      2384  2554  2557      BADHDR
0      2385
0      2386
0      2387
0      2388
0      2389  2555  0176      BDSRT,  BR FLAGO T      /BAD START ON DATA AM OR IDAM?
0      2390  2556  2577      BADDAM
0      2391
0      2392  2557  0230      BADHDR, OPEN TEMP8      /IDAM, INCREMENT AND TEST BAD START INNER COUNT
0      2393  2560  0071      ESP
0      2394  2561  0073      ICT
0      2395  2562  0275      LSR
0      2396  2563  0064      LSP
0      2397  2564  0124      BR COFL F
0      2398  2565  2615      PTRYAG      /NO OVERFLOW, GO TRY ANOTHER HEADER
0      2399  2566  0234      OPEN TEMP8      /INCREMENT AND TEST BAD START OUTER COUNT
0      2400  2567  0071      ESP
0      2401  2570  0073      ICT
0      2402  2571  0124      BR COFL F
0      2403  2572  2615      PTRYAG      /NO OVERFLOW, GO TRY AGAIN
0      2404  2573  0070      XSTRYS, LCT      /TOO MANY TRIES FOR A HEADER
0      2405  2574  0160      KXSTRYS
0      2406  2575  0226      JUMP F5
0      2407  2576  2610      GOERDN
0      2408
0      2409
0      2410  2577  0234      BADDAM, OPEN TEMP8      /BAD START ON DATA AM, INCREMENT AND TEST BAD START COUNT
0      2411  2600  0071      ESP
0      2412  2601  0073      ICT
0      2413  2602  0075      LSR
0      2414  2603  0064      LSP
0      2415  2604  0124      BR COFL F
0      2416  2605  2617      PGETDA      /NO OVERFLOW GO TRY FOR DATA AM AGAIN

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/RX01 FLOPPY CONTROLLER FIRMWARE      PAL10  V142A  9-FEB-76      9:17  PAGE 15-4

2417  2626  0070  WDDAM, LCT          /TRIED 3 TIMES FOR DATA AM, GO FLAG THE ERROR
2418  2607  0170          KNDAM
2419  2610  0210  GOERON, OPEN ERREG
2420  2611  0075          LSR
2421  2612  0064          LSP
2422  2613  0212          JUMP F2
2423  2614  1000          ERDONE
2424
2425  2615  0216  PTRYAG, JUMP F3      /POINTER TO FIND AM IDAM
2426  2616  1413          TRYAGN
2427
2428
2429  2617  0216  PGETDA, JUMP F3      /PDINTER TO FIND DATA AM
2430  2620  1441          GETDAM
2431
2432
2433
2434
2435  2621  0070  /[ROUTINE: INITIALIZE CONT.]
2436  2622  0030  WRDNG, LCT          /HOME WAS FOUND WHILE STEPPING OUT
2437  2623  0226          KARONG
2438  2624  2610          JUMP F5
2439          GOERON
2440
2441  2625  0070  DNRCAL, LCT          /CALL CHECK READY SUBROUTINE
2442  2626  1771          PNDRDY
2443  2627  0226          JUMP F5
2444  2630  2640          CHKRDY
2445
2446  2631  0070  INTRDY, LCT          /DRV 0 IS READY CALL BOOT SUBROUTINE TO
2447  2632  0770          GOREAD      /MDVE TO TRACK 1, THEN GO TO READ ROUTINE TO
2448  2633  0274          OPEN RTN    /PICK UP SECTOR 1
2449  2634  0075          LSR
2450  2635  0064          LSP
2451  2636  0202          JUMP F0
2452  2637  0252          BOOT
2453
2454
2455

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/RX01 FLOPPY CONTROLLER FIRMWARE      PAL10  V142A  9-FEB-76      9:17  PAGE 16

2456  /[SUBROUTINE: CHECKREADY]
2457
2458  /SUBROUTINE TO CHECK THE SELECTED DRIVE TO SEE IF THE
2459  /DISK IS INSERTED AND UP TO SPEED. THIS IS DONE BY CHECKING TO SEE IF
2460  /THE INTERVAL BETWEEN 2 INDEX PULSES IS BETWEEN 150 MS AND 180 MS. RETURN
2461  /ADDRESS IS PLACED IN THE COUNTER BEFORE ENTRY. NOT READY RETURN IS
2462  /TO THE RETURN ADDRESS. READY RETURN IS TO THE RETURN ADDRESS PLUS 2
2463
2464
2465
2466
2467  2640  0274  CHKRDY, OPEN RTN      /SAVE RETURN ADDRESS
2468  2641  0075          LSR
2469  2642  0064          LSP
2470
2471  2643  0070          LCT          /2 TO CNTR FOR INDEX PASS COUNT
2472  2644  0375          -2-1
2473
2474  2645  0230          OPEN TEMPA    /FOR INDEX PASS COUNT
2475
2476  2646  0075  NEWPAS, LSR          /RESTORE INDEX PASS COUNT
2477  2647  0064          LSP
2478
2479  2650  0061          FLAG OFF      /CLOSE INDEX WINDOW
2480
2481  2651  0042          LDHD          /TO CLEAR INDEX FLOP
2482
2483  2652  0070          LCT          /FOR 15 TIMES THROUGH 10MS LDDP
2484  2653  0360          -15-1
2485
2486  2654  0234  STDLY, OPEN TEMPB    /RESTORE OUTER COUNT
2487  2655  0075          LSR
2488  2656  0064          LSP
2489
2490  2657  0070          LCT          /FOR 40 TIMES THROUGH .25MS LOOP
2491  2660  0327          -40-1
2492
2493  2661  0240          OPEN TEMPC
2494  2662  0075  SPBACK, LSR          /RESTORE INNER COUNT
2495  2663  0064          LSP
2496
2497  2664  0070          LCT          /WAIT .25 MS FOR INDEX
2498  2665  0005          -250-1
2499  2666  0116          BR INDEX T
2500  2667  2714          SAWIND      /FOUND INDEX
2501  2670  0073          ICT
2502  2671  0124          BR COFL F
2503  2672  2666          -4
2504
2505  2673  0240          OPEN TEMPC    /INCREMENT AND TEST INNER COUNT
2506  2674  0071          ESP
2507  2675  0073          ICT
2508  2676  0124          BR COFL F
2509  2677  2662          SPBACK
2510

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/RX01 FLOPPY CONTROLLER FIRMWARE			PAL10	V142A	9-FEB-76	9:17	PAGE 16-1
2511	2700	0234	OPEN TEMPB		/INCREMENT AND TEST OUTER COUNT		
2512	2701	0071	ESP				
2513	2702	0073	ICT				
2514	2703	0124	BR COFL F				
2515	2704	2655	STDLY+1				
2516							
2517	2705	0176	BR FLAGO ONE		/WAS INDEX WINDOW OPEN?		
2518	2706	2767	UNRDY		/YES, NO INDEX WITHIN 180MS		
2519							
2520	2707	0062	FLAG ON		/NO, OPEN WINDOW		
2521							
2522	2710	0070	LCT		/FOR 3 TIMES THROUGH 10 MS LOOP		
2523	2711	0374	-3-1		/THE WINDOW IS 30 MS WIDE		
2524							
2525	2712	0226	JUMP F5		/GO LOOK FOR INDEX		
2526	2713	2654	STDLY				
2527							
2528							
2529	2714	0230	SAWIND, OPEN TEMPB		/INCREMENT AND TEST INDEX PASS COUNT		
2530	2715	0071	ESP				
2531	2716	0073	ICT				
2532	2717	0124	BR COFL F				
2533	2720	2646	NEWPAS		/THIS WAS 1ST INDEX, GO LOOK FOR SECOND		
2534							
2535	2721	0174	BR FLAGO ZERO		/THIS WAS 2ND INDEX, WAS THE WINDOW OPEN?		
2536	2722	2767	UNRDY		/NO, INDEX OCCURRED TOO SOON		
2537							
2538	2723	0274	OPEN RTN		/YES, INDEX OCCURRED BETWEEN 150 AND 180 MS, INCREMENT		
2539	2724	0071	ESP		/RETURN ADDRESS BY 2		
2540	2725	0073	ICT				
2541	2726	0073	ICT				
2542	2727	0075	LSR				
2543	2730	0064	LSP				
2544							
2545	2731	0214	OPEN STAT		/SET DRV RDY BIT OF STAT IN SR		
2546	2732	0071	ESP				
2547	2733	0075	LSR				
2548							
2549	2734	0076	ROTATE ONE				
2550							
2551	2735	0061	FLAG OFF		/FLAG OFF TO INDICATE FIRST PASS		
2552							
2553	2736	0070	ROT3, LCT		/END AROUND SHIFT OF THE NEXT 3 BITS OF STAT IN SR		
2554	2737	0374	-3-1				
2555	2740	0122	BR SR7 T				
2556	2741	2745	.+4				
2557	2742	0074	ROTATE ZERO				
2558	2743	0226	JUMP F5				
2559	2744	2746	.+2				
2560	2745	0076	ROTATE ONE				
2561	2746	0073	ICT				
2562	2747	0124	BR COFL F				
2563	2750	2740	.-8				
2564							
2565	2751	0176	BR FLAGO T		/WAS IT FIRST 3 OR LAST 3		

/RX01 FLOPPY CONTROLLER FIRMWARE			PAL10	V142A	9-FEB-76	9:17	PAGE 16-2
2566	2752	2764	EXCHRY		/LAST, GO EXIT		
2567							
2568	2753	0140	BR WR TEN F		/UPDATE WRITE PROTECT BIT OF STAT IN SR		
2569	2754	2760	.+4				
2570	2755	0074	ROTATE ZERO				
2571	2756	0226	JUMP F5				
2572	2757	2761	.+2				
2573	2760	0076	ROTATE ONE				
2574							
2575	2761	0062	FLAG ON		/GO SHIFT AROUND LAST 3 BITS		
2576	2762	0226	JUMP F5				
2577	2763	2736	ROT3				
2578							
2579	2764	0064	EXCHRY, LSP		/RESTORE THE STAT		
2580							
2581	2765	0274	OPEN RTN		/RETURN FROM CHKRDY SUBROUTINE		
2582	2766	0217	JUMP F3 IND				
2583							
2584	2767	0214	UNRDY, OPEN STAT		/CLEAR DRV READY BIT OF STAT IN SR		
2585	2770	0071	ESP				
2586	2771	0075	LSR				
2587	2772	0074	ROTATE ZERO				
2588							
2589	2773	0226	JUMP F5		/GO UPDATE REST OF STAT IN SR		
2590	2774	2735	ROT3-1				
2591							
2592	2775	0000	0		/OPEN		
2593	2776	0000	0		/OPEN		
2594	2777	0000	0		/OPEN		
2595							
2596							
2597							

0200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0100	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0300	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0400	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0500	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0600	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0700	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1000	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1100	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1300	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1400	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1500	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1600	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1700	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
2000	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
2100	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
2200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
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2400	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
2500	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
2600	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
2700	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
3000								
3100								
3200								
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3600								
3700								

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4100

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6700

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7100

7200
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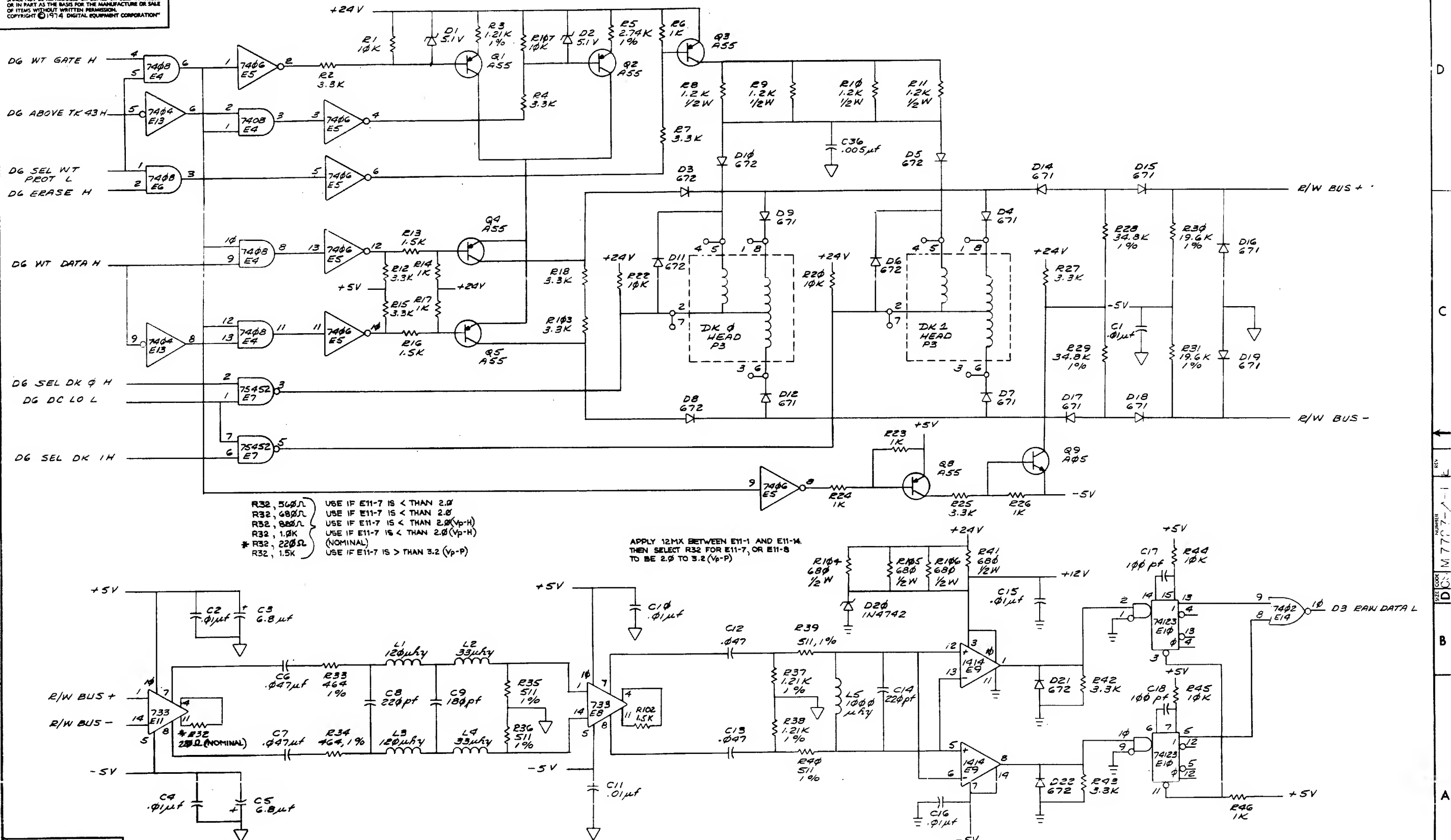
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7500

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7700

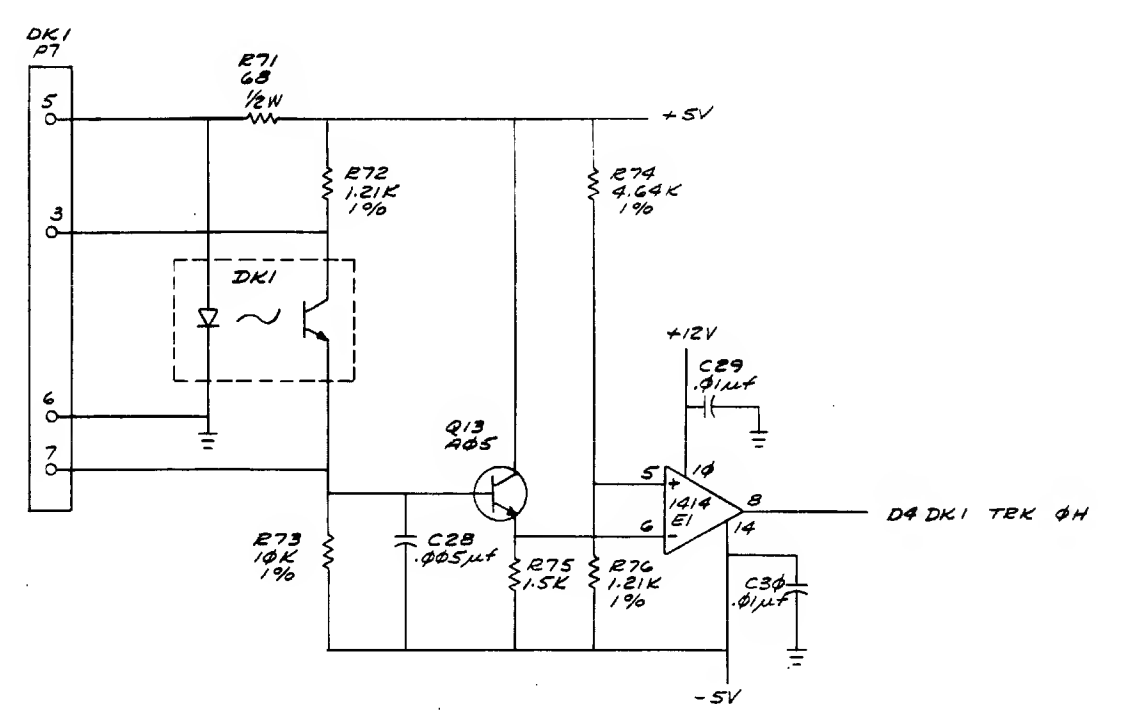
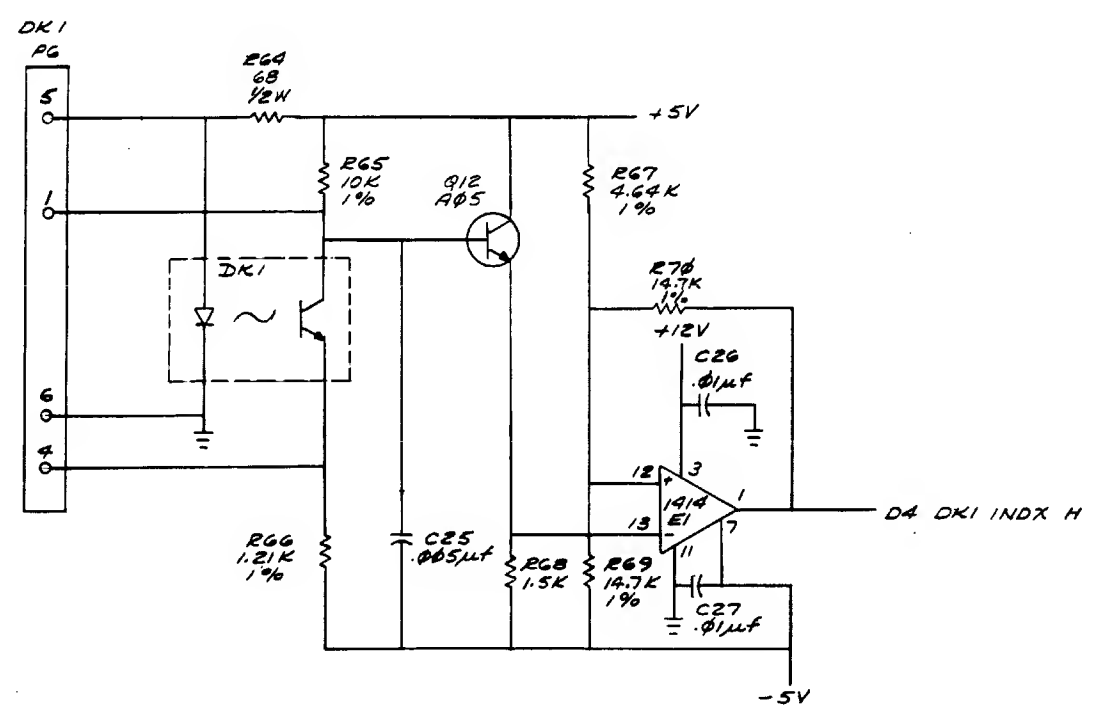
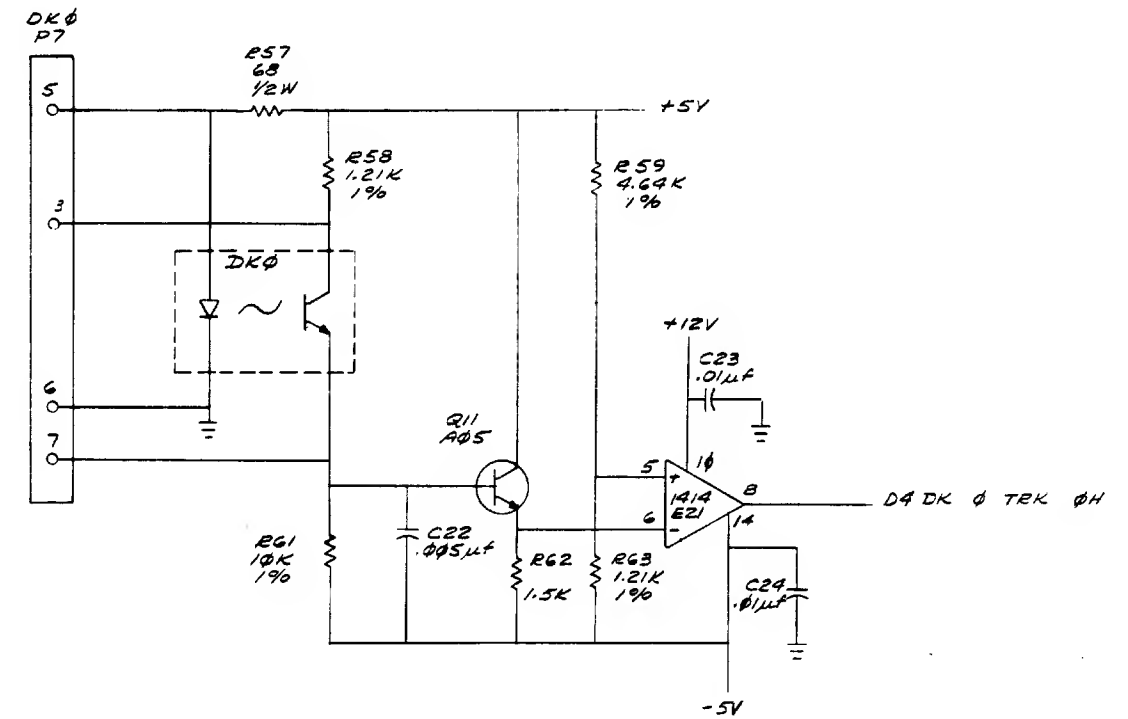
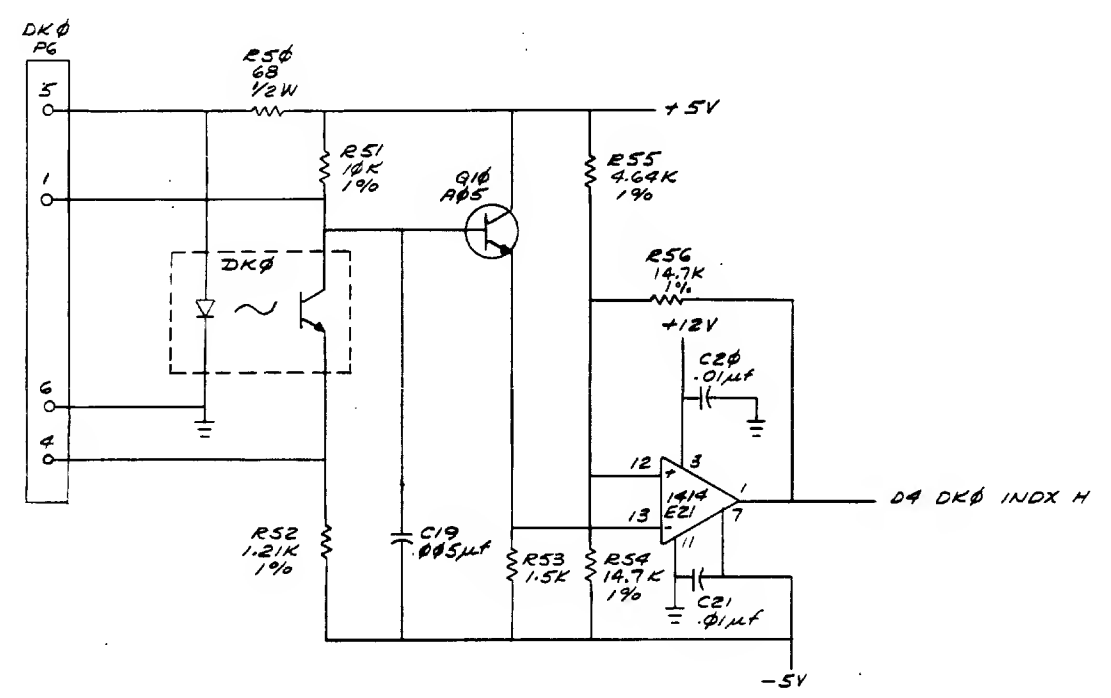
/RX01 FLOPPY CONTROLLER FIRMWARE		PAL10	V142A	9-FEB-74	9:17	PAGE 16-5
A	0562	ERTRK	0242	PFUNCT	0370	WHCHDR 0075
ABACK	0535	EXCHRY	2764	PGETDA	2617	WRONG 2621
ABV43	0344	FILL1	1175	PGDTIT	1346	WRT0S 1322
AGAIN	0531	FILLBU	1110	PNORDY	1771	WRTCRC 0624
AGAIN1	0550	FINDHD	1400	PNTRDY	1765	WRTDAM 0514
AGAIN2	0722	FINDSE	0714	PROSEC	1105	WRTDAT 0566
AGAIN3	1576	FINDTR	0103	PRTERE	0503	WRTPTT 0656
AGAIN4	1616	FUNCT	1036	PTRYAG	2615	WRTSEC 0400
AGAIN5	1635	FUNCT2	1057	PUTSEC	0145	XFRQ 1131
AGAIN6	1653	FUNCT4	1066	PUTTRY	0166	XSTRYS 2573
B	0564	FUNCT6	1076	PYSRDY	1767	
BACK	2322	GETCMD	2001	RCALOK	0060	
BADDAM	2577	GETCRC	2221	RDEREG	1275	
BADHDR	2557	GETDAM	1441	RDSEC	0760	
BADSRT	1673	GETWRD	2000	RDSTAT	1224	
BACK	0554	GLESSF	2432	READ	2167	
BDSRT	2555	GDDONE	0712	READDY	0706	
BOOT	0252	GODUN	1272	RECAL	0035	
BYTEQU	1152	GOERDN	2610	RECAL1	0034	
C	0615	GOREAD	0770	RFINTR	0355	
CBACK	0576	GOTIT	2010	ROT	1251	
CEGATE	0676	GDTONE	2030	ROT3	2736	
CFINSE	0351	GOTRUN	2347	SAWIND	2714	
CHKPAR	2041	GOTWRD	2076	SECHLF	0543	
CHKRDY	2640	HCR CER	2546	SECLPS	2124	
CHKSEC	0730	HDR COM	1571	SELFER	0620	
CKHCRC	2515	HDSETL	0322	SPBACK	2662	
CKHOME	2105	HLFDLY	0466	STASH	0437	
CLRIO	1243	HOMERR	2456	STDLY	2654	
CKGATE	0666	ILTRK	0206	STDONE	1031	
D	0653	INI0	0045	STEPHO	2100	
DAM	1675	INTER1	1374	STPOUT	0275	
DAMSUP	0460	INTRDY	2631	SWGATF	0407	
DATA	2206	LDOP	1326	TEST	2352	
DATAA	0571	MAGCDM	2400	TEST1	1351	
DBACK	0646	MOREOS	1421	TEST2	1350	
DCRCER	2304	NEWORD	1141	TESTDN	1372	
DELAY	1300	NEWPAS	2646	TIMERR	1667	
DEL DAT	1727	NEXTG	2421	TKSKER	2542	
DIF	2462	NODAM	2606	TRKEQ	0246	
DIFA	2503	NOSTPS	0357	TRYAGN	1413	
DIFB	2501	NOTYET	1755	TSTAGN	1353	
DLY25	2145	NOZERO	1746	TSTGO	2443	
DNRCAL	2625	NOTHER	2034	TSTRTN	0004	
DONDLY	2165	NXDRV0	0064	UDIF	0134	
DONSTP	2135	NXDRV1	0070	UNRDY	2767	
DUNSTP	0305	NXHDR	0737	UONE	0120	
E	0627	NXIDAM	1761	USAME	0141	
EMPTY1	1210	NXPRAM	1751	UZERO	0127	
EMPTYB	1107	OKDONE	1006	WAIT	0743	
ENDDAM	1742	OUT	2150	WAITRN	2312	
ERDONE	1000	PDRCL	0372	WATDAT	2021	

/RX01 FLOPPY CDNTROLLER FIRMWARE
 PAL10 V142A 9-FEB-74 9:17 PAGE 16-6
 ERRORS DETECTED: 0
 LINKS GENERATED: 0
 RUN-TIME: 18 SECONDS
 3K CORE USED

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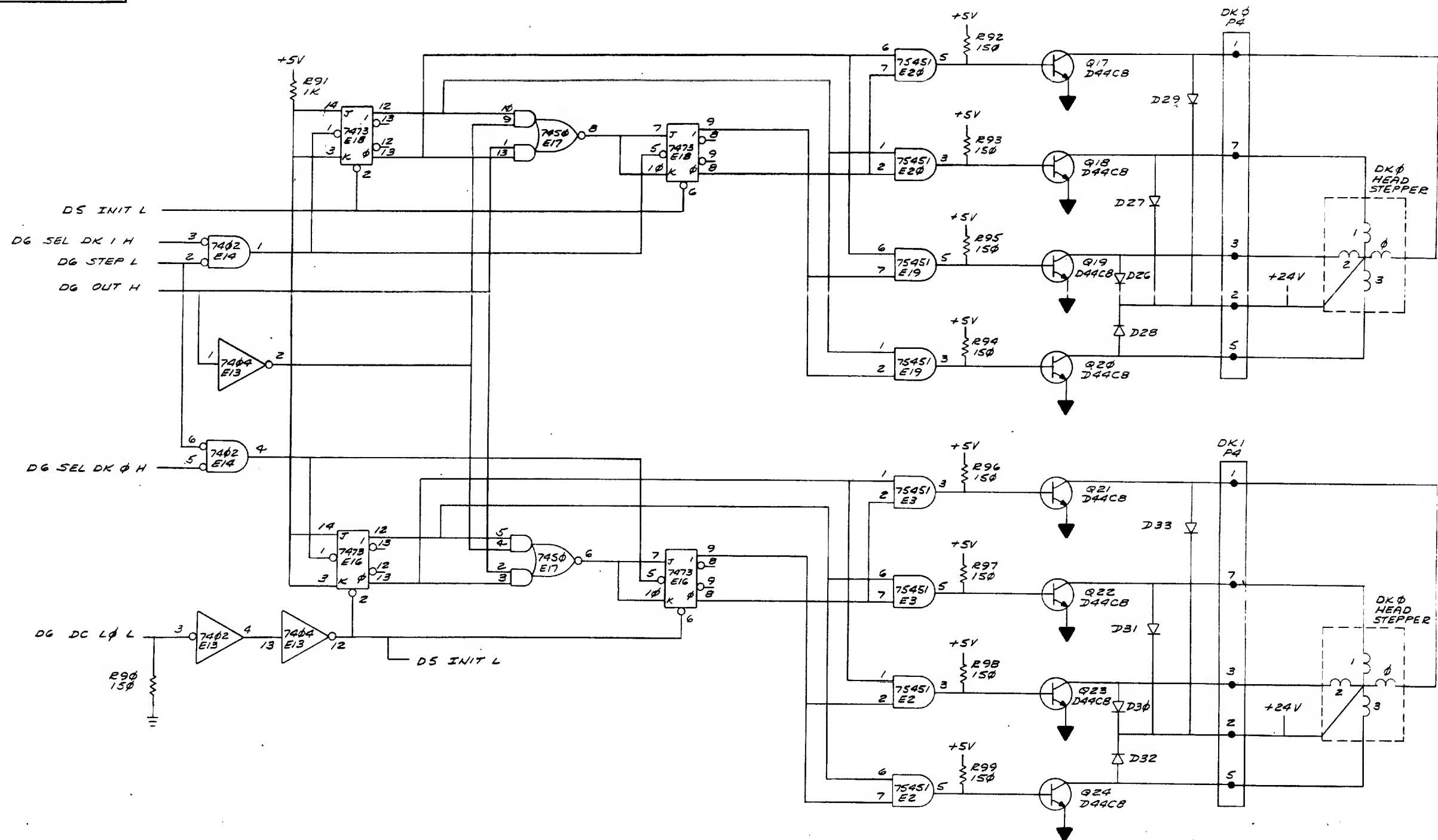


REVISIONS		
CHK	CHANGE NO.	REV.

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8 7 6 5 4 3 2 1

DCS M7727-0-1



DCS M7727-0-1 E

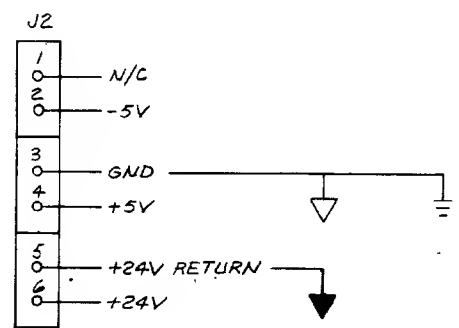
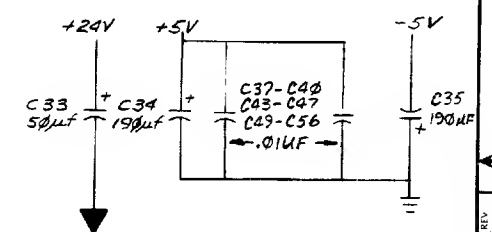
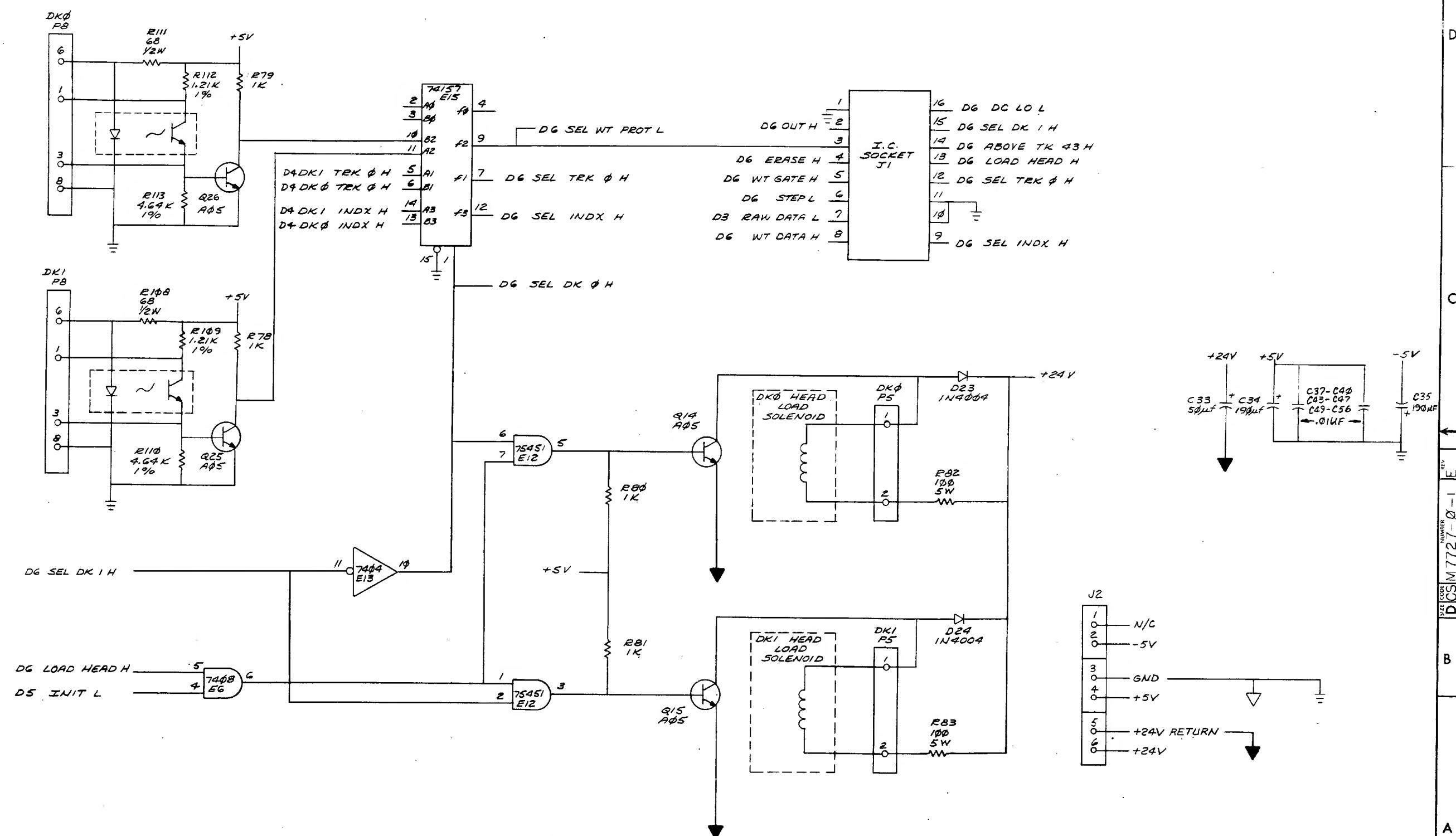
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE READ / WRITE CONTROL (DS) SIZE CODE DCS NUMBER M7727-0-1 REV. E
SCALE SHEET 5 OF 6 DIST.

8 7 6 5 4 3 2 1

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DCS M7727-0-1 2



REVISIONS		
CHK	CHANGE NO.	REV.

DRAWING DIRECTORY

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CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

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SEQUENCE

SEQUENCE

H771 POWER SUPPLY
H771-A CIRCUIT SCHEMATIC
H771-C CIRCUIT SCHEMATIC
H771-D CIRCUIT SCHEMATIC
RX01 POWER BOARD ASSY
RX01 POWER SUPPLY BOARD

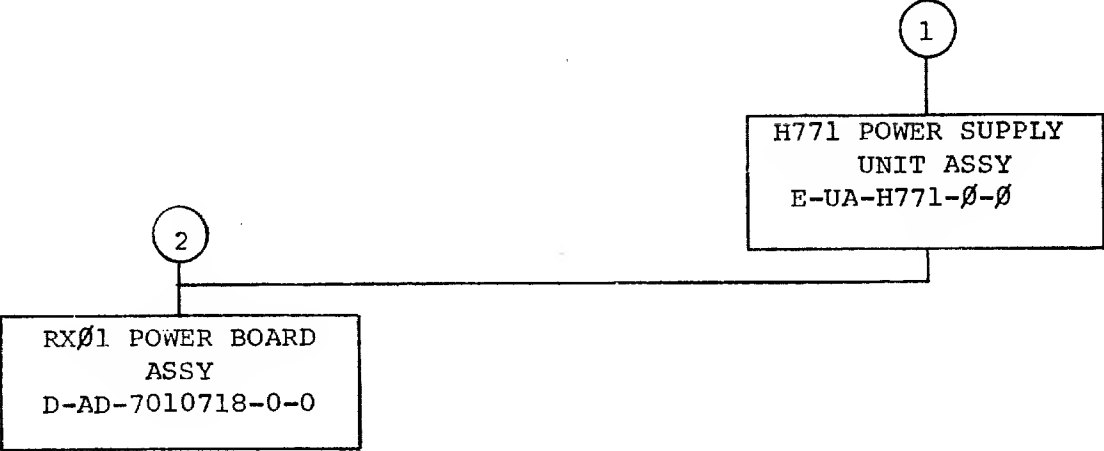
B-DD-H771-Ø
D-CS-H771-A-1
D-CS-H771-C-1
D-CS-H771-D-1
D-AD-7010718-0-0
D-CS-5411398-0-1

UNIT VARIATIONS

[illegible]

REVISIONS		
DATE	CHG. NO.	REV
7-75	H771-1	A
10-75	H771-2	B
11-75	H771-3	C
3-76	H771-4	D
1-78	H771-5	E
7-79	H771-6	F
11-79	H771-ML7	H

USED ON OPTION/MODEL		DRM. W. McCarthy	DATE 2/3/75	TITLE H771 POWER SUPPLY										
RXØ1		CHK'D. W.F.M. Cady	DATE 6/13/75											
		PROJ. ENG. R. L. Brown	DATE 6/13/75											
		FRD. J. Miller	DATE 2/12/75											
		FIELD SERV. K. L. Hearn	DATE 6/13/75											
SHEET 1 OF 3				SIZE B	CODE DD	NUMBER H771-Ø								P-V H
				DIST										

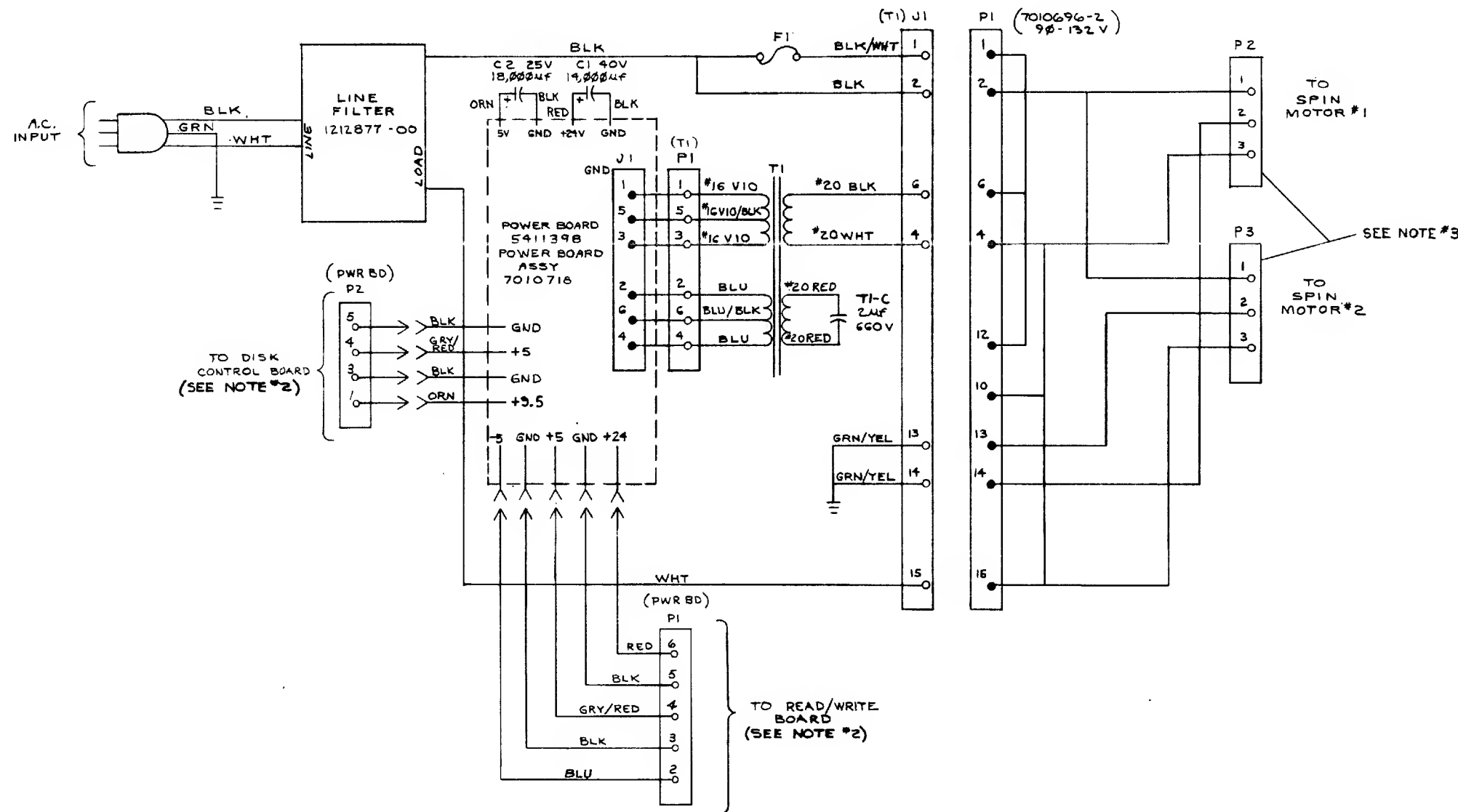


TITLE		SIZE	CODE	NUMBER	REV
H771 POWER SUPPLY	SHEET 2 OF 3	B	DD	H771-Ø	H

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NOTES:

1. ALL WIRE TO BE #18 AWG UNLESS OTHERWISE SPECIFIED.
2. SLOT BETWEEN P1-4 + P1-5 CONTAINS A DUMMY PIN. SLOT BETWEEN P2-4 + P2-5 ALSO CONTAINS A DUMMY PIN.
3. NO DOUBLE CRIMPS ARE ALLOWED IN MOLEX CONNECTOR(S) TO MOTOR(S).

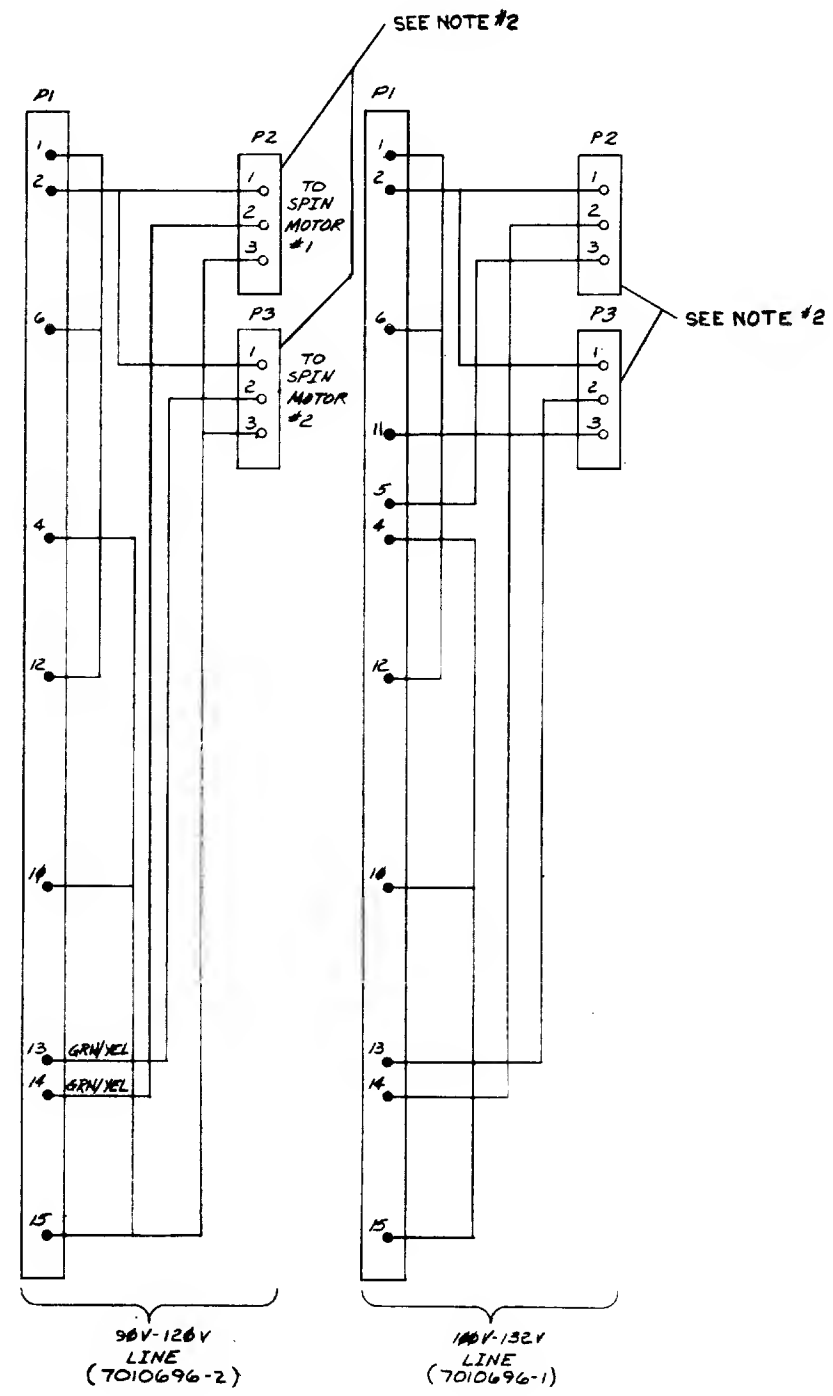


REV.	CHANGE NO.	DATE	BY	CHK
A	1	1/22/75	B. HAZEN	B. HAZEN
B	2	3-18-75	B. HAZEN	B. HAZEN
C	3	3-18-75	B. HAZEN	B. HAZEN
D	4	3-18-75	B. HAZEN	B. HAZEN

DRN. D.E. O'Leary	1/22/75	FIRST USED ON	RX01
CHK'D DFM	3/10/75	TITLE	H771A POWER CONNECTIONS
ENG. D. HAZEN	3-18-75	PROD. D. HAZEN	3-18-75
PROD. D. HAZEN	3-18-75	NEXT HIGHER ASSY.	
B-DD-771-0	SCALE NONE	SIZE CODE	D CS
SHEET 1 OF 1	DIST.	NUMBER	H771-A-1
		REV.	B

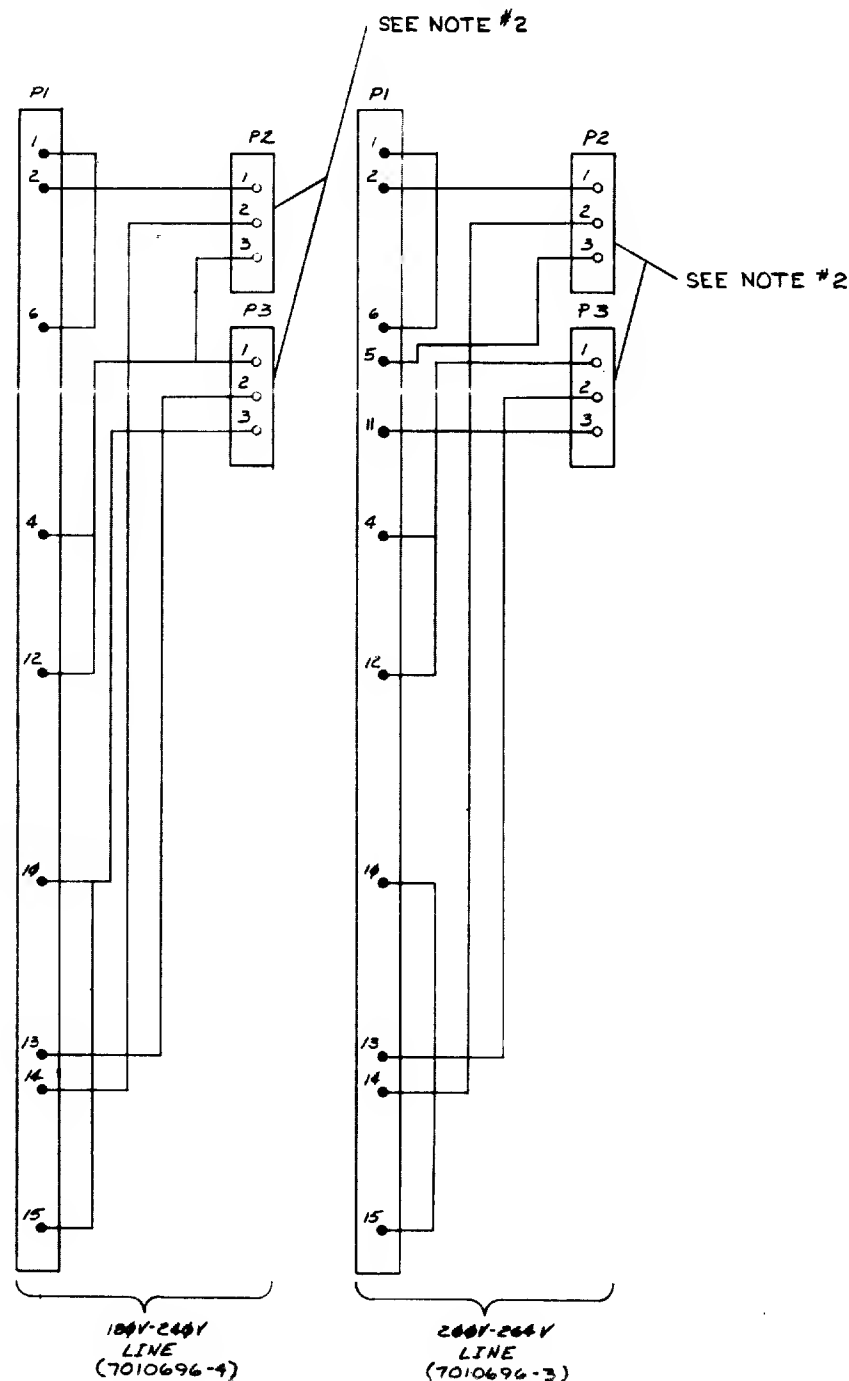
NOTES:

1. SLOT BETWEEN PI-4 AND PI-5 CONTAINS A DUMMY PIN. SLOT BETWEEN P2-4 AND P2-5 ALSO CONTAINS A DUMMY PIN.
2. NO DOUBLE CRIMPS ALLOWED IN MOLEX CONNECTOR(S) TO MOTOR(S).
3. ALL WIRES TO BE #18AWG UNLESS OTHERWISE SPECIFIED.



DRAWN BY <i>W. H. H.</i>	7-5-75	FIRST USED ON		
CHECKED BY <i>E. REMUND</i>	8-5-75	RX01	00-00-01	
ENGINEERED BY <i>W. H. H.</i>	8-10-75	TITLE		
PROJECT ENG. <i>W. H. H.</i>	8-10-75	H771-C POWER CONNECTIONS		
PROD. <i>W. H. H.</i>	9-2-75			
NEXT HIGHER ASBY.				
B-DD-H771-C		SIZE	CODE	NUMBER
SCALE <i>1/4" = 1"</i>		D	CS	H771-C-1
SHEET 1 OF 1		DIST.		REV. C

1. SLOT BETWEEN P1-4 AND P1-5 CONTAINS A DUMMY PIN. SLOT BETWEEN P2-4 AND P2-5 ALSO CONTAINS A DUMMY PIN.
2. NO DOUBLE CRIMPS ALLOWED IN MOLEX CONNECTOR(S) TO MOTOR(S).
3. ALL WIRES TO BE #18AWG UNLESS OTHERWISE SPECIFIED.



REVENUES		
CASE	CHANGE NO.	REV
—	H771-00001	*
ORIGINATED		
H771-00002	A	
<i>10/27/71</i>	<i>10/27/71</i>	<i>15</i>
B. HAZEN		
A. <i>10/27/71</i>	<i>10/27/71</i>	<i>15</i>
B. HAZEN		
H771-00003	B	
<i>10/27/71</i>	<i>10/27/71</i>	<i>15</i>
B. HAZEN		
H771-00004	C	
<i>10/27/71</i>	<i>10/27/71</i>	<i>15</i>
B. HAZEN		
H771-00005	D	
<i>10/27/71</i>	<i>10/27/71</i>	<i>15</i>
B. HAZEN		

DRAWN BY <i>W. Fisher</i>	7-30-75	FIRST USED ON	<i>80-10-2</i>
CHECKED BY <i>E. KENNEDY</i>	8-5-75	<i>RX01</i>	
ENG. BY <i>W. J. Galt</i>	8-12-75	TITLE	
PROD. ENG. BY <i>W. J. Galt</i>	8-12-75	<i>H77-D POWER</i>	
PROD. BY <i>W. J. Galt</i>	8-12-75	<i>CONNECTIONS</i>	
NEXT HIGHER ASSY.			
<i>B-DD-H77-D</i>		SIZE	CODE
SCALE <i>1" = 1"</i>		<i>D</i>	<i>CS</i>
SHEET <i>1</i> OF <i>1</i>		NUMBER	REV.
		<i>H77-D-1</i>	<i>C</i>
		DIST.	

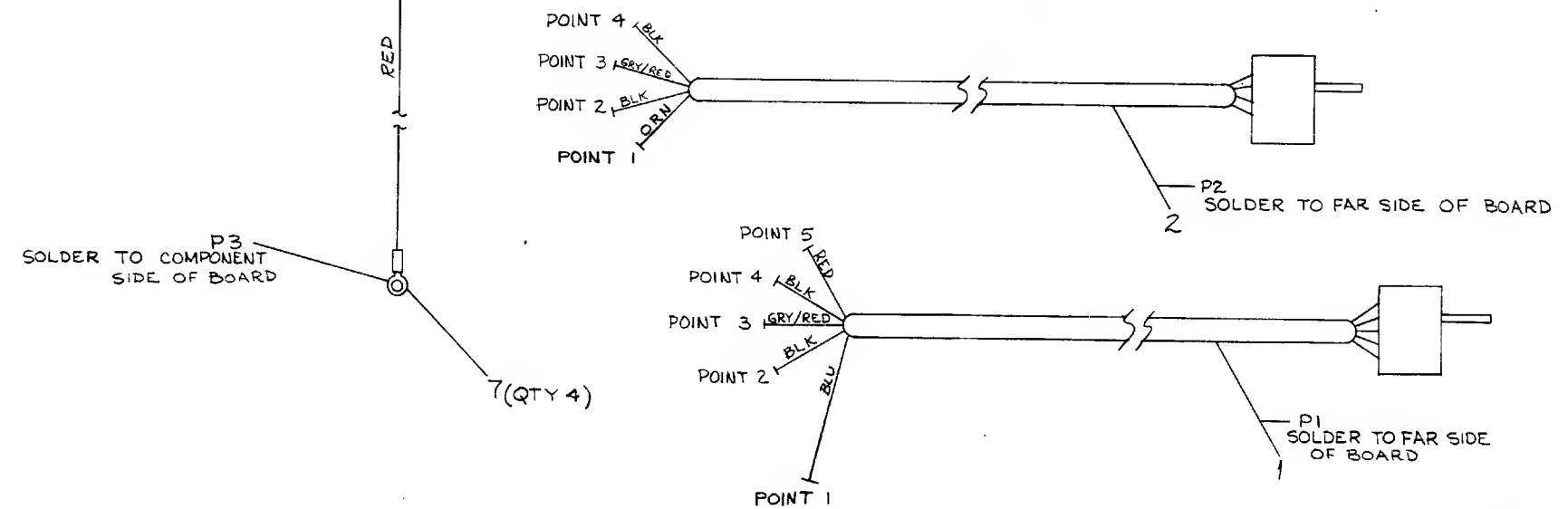
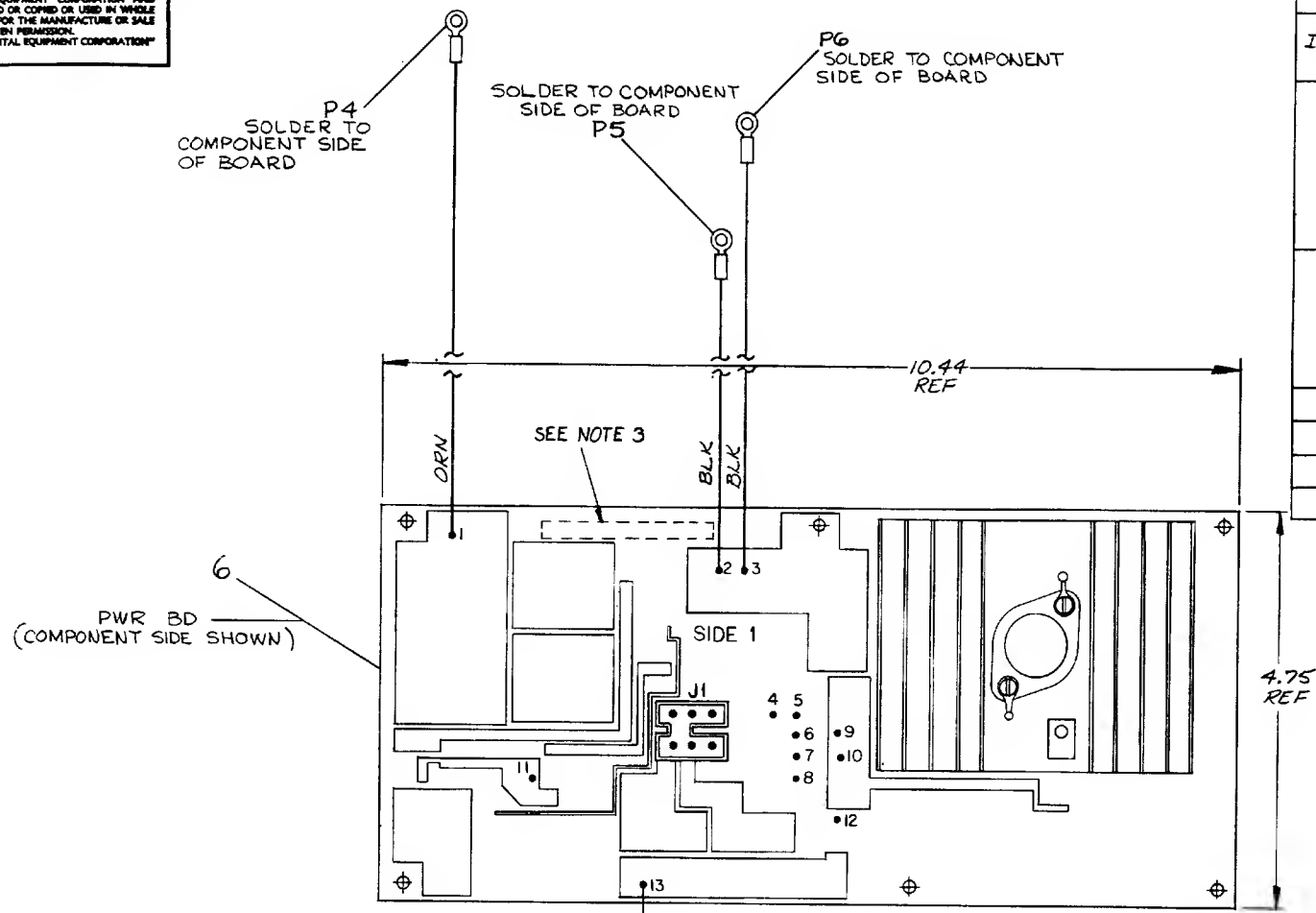
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WIRE TABLE

ITEM NO.	DESCRIPTION		FROM		TO		LENGTH
	AWG	COLOR	CONN	TERM	CONN	TERM	
1	18	BLU	P1	POINT 1	PWR BD	#11 SOLDER	
		BLK	P1	POINT 2	PWR BD	#6	
		GRY/RED	P1	POINT 3	PWR BD	#9	
		BLK	P1	POINT 4	PWR BD	#5	
		RED	P1	POINT 5	PWR BD	#12	
2		ORN	P2	POINT 1	PWR BD	#4	
		BLK	P2	POINT 2	PWR BD	#7	
		GRY/RED	P2	POINT 3	PWR BD	#10	
	18	BLK	P2	POINT 4	PWR BD	#8	
3	14	RED	P3	ITEM 7	PWR BD	#13	13 IN ±.25
4	14	BLK	P5	ITEM 7	PWR BD	#2	7 IN ±.25
5	14	ORN	P4	ITEM 7	PWR BD	#1	11 IN ±.25
6	14	BLK	P6	ITEM 7	PWR BD	#3 SOLDER	9 IN ±.25

NOTES:

1. STRIP LENGTH FOR ITEMS 3, 4 & 5 ARE TO BE .16 LONG.
2. THE BLACK WIRES ON P1 & P2 CAN BE INTERCHANGED BETWEEN POINTS 5, 6, 7, & 8 ON THE POWER BOARD.
3. INK STAMP ASS'Y NO. 7010718 IN FIGURES, 13 HIGH WHERE SHOWN.



4	CONN, SOLDERLESS	9007928-00	7
1	POWER SUPPLY BOARD, RXØ1	0-85-5411398-0-1	6
4	WIRE, #14 AWG, IPVC, ORANGE	9107370-33	5
4	WIRE, #14 AWG, IPVC, BLACK	9107370-00	4
4	WIRE, #14 AWG, IPVC, RED	9107370-22	3
1	HARNESS, DISK CONTROL BOARD	0-1A-7010853-0-0	2
1	HARNESS, READ/WRITE BOARD	0-1A-7010854-0-0	1

QUANTITY & VARIATION	DESCRIPTION	DWG./PART NO.	ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			
ANGLES 30° 30'	CLASS OF ACCURACY (CHECK ONE)	NOMINAL DIMENSION RANGE INCHES	
SURFACE QUALITY IN	MEDIUM	OVER 0 TO 0.2	
MICROINCHES	PREFERRED	OVER 0.2 TO 1.0	
THIRD ANGLE PROJECTION		FIRST USED ON	
REMOVE BURRS AND BREAK SHARP CORNERS	DO NOT SCALE DWG	NEXT HIGHER ASSY.	
MATERIAL SEE PARTS LIST	SCALE 1/1	SHEET 1 OF 1	
FINISH			

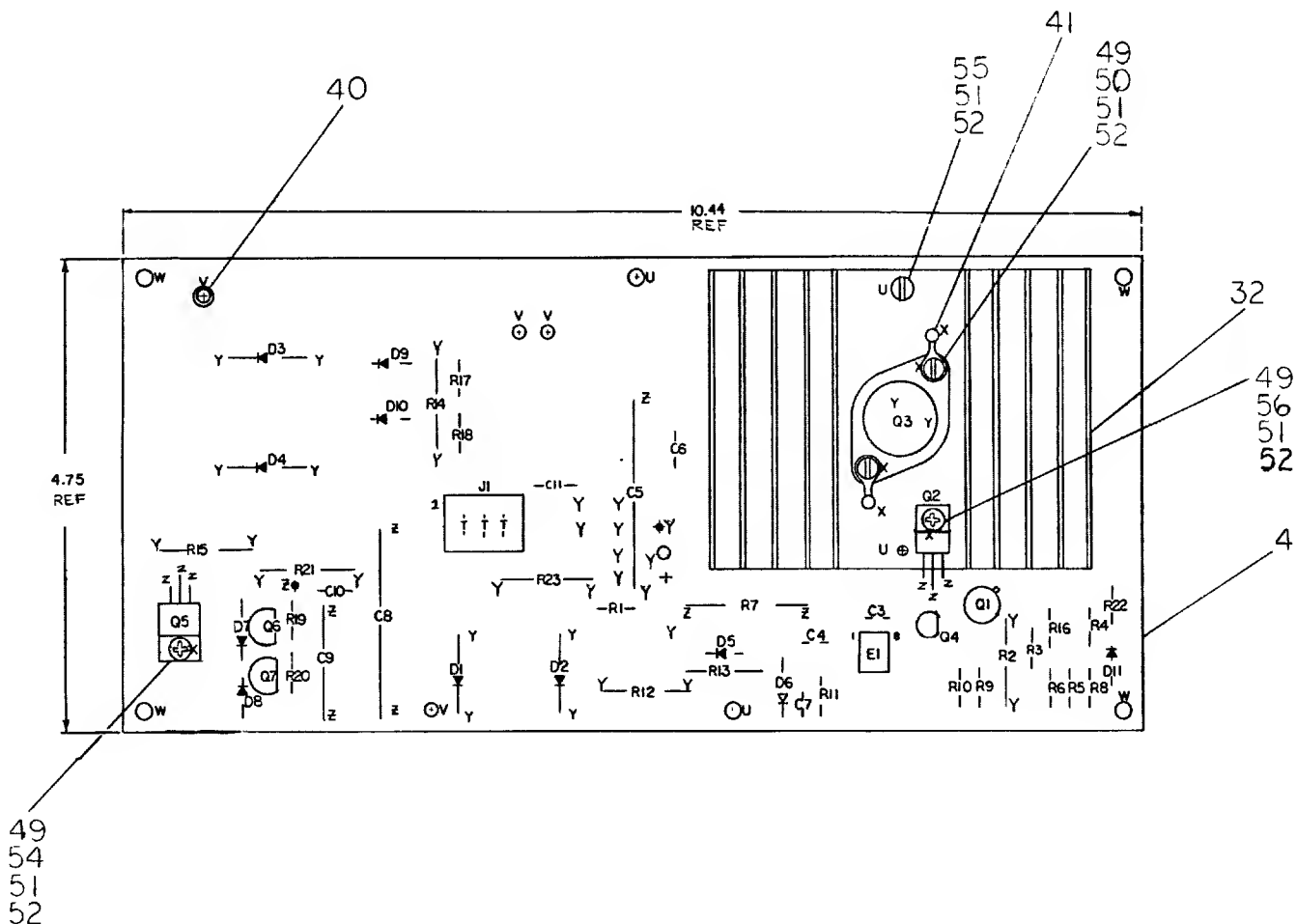
DRN. T. Quill	1/28/75	TITLE RXØ1 POWER BOARD ASS'Y	
CHK'D M. Carter	3/5/75	SIZE CODE D AD 7010718-0-0	
ENG. J. H. H. H.	3/18/75	NUMBER 5	
PROJ. ENG. J. H. H. H.	3/18/75	REV. 5	
PROD. J. H. H. H.	3/18/75		

REV.	REV.
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

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NOTES:

1. UNLESS OTHERWISE SPECIFIED
A. ALL RESISTORS ARE 1/4W, ±5%.
2. DOTTED AREAS COMPONENT NOT ON BOARD.
3. AT TIME OF MODULE ASSY, ITEM 49 SHOULD BE APPLIED BENEATH Q2, Q3 & Q5.
4. AT TIME OF ASSEMBLY, Q2, Q3 AND Q5 MOUNTING HARDWARE MUST BE TORQUED TO 4 TO 6 INCH POUNDS.
5. Q4, Q6 AND Q7 OUTLINES CORRESPOND TO GENERAL ELECTRIC TYPE TRANSISTORS.
6. FLAT RECTANGULAR WASHER SUPPLIED BY VENDOR TO BE MOUNTED UNDER Q2 AND Q5 SCREWHEAD.



REF	X-Y COORDINATE	HOLE LOCATION	QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
REF		ASSY/DEILLING HOLE LAYOUT					
REF		MODULE ECO HISTORY					
1		ETCHED CIRCUIT BOARD					
3	C3, C4, C7	CAP .01µF 100V 20% DISC					
2	C5, C8	CAP 1000µF 16V ELEC					
3	C6, C10, C11	CAP .1µF 100V 20% DISC					
1	C9	CAP 190µF 12V 10% ELEC					
2	D1, D2	DIODE A158 (IN5624)					
2	D3, D4	DIODE MR752					
1	D5	DIODE 1N4744 15V 10%					
2	D7, D6	DIODE .4M5.121, 5.1V 1%					
1	D8	DIODE D664					
2	D9, D10	DIODE 1N4004					
1	D11	DIODE 1N754A 6.8V 5%					
1	R5	RES 39 1/4W 5% CC					
1	R6	RES 470 1/4W 5% CC					
1	R7	RES .08 5W 3%					
1	R8	RES 47 1/4W 5% CC					
1	R9	RES 1M 1/4W 5% CC					
1	R12	RES 270 2W 5% CC					
1	R13	RES 511 3/4W 1%					
1	R14	RES 10 2W 10% CC					
1	R15	RES 180 1W 5% CC					
1	R16	RES 10 1/4W 5% CC					
1	R18	RES 120 1/4W 5% CC					
2	R19, R20	RES 1K 1/4W 5% CC					
1	R22	RES 220 1/4W 5% CC					
1	R21	RES 120 1W 5% CC					
1	Q1	TRANS DEC 2219-2					
1	Q2	TRANS D44C3					
1	Q3	TRANS DEC 3715					
2	Q4, Q6	TRANS MXA A05					
1	Q5	TRANS D45H8					
1	Q7	TRANS MXA A55					
1	E1	I.C. DEC 301AN					
4		EYELET					
2		TERMINAL LUG, SOLDER					
1	J1	CONNECTOR 6 PIN					
1	R4	RES 560 1/4W 5% CC					
1	R23	RES 75 1W 5% CC					
3	R1, R10, R11	RES 10K 1/4W 5% CC					
1	R2	RES 390 2W 5% CC					
1	R3	RES 620 1/4W 5% CC					
AIR		THERMAL COMPOUND					
2		SCREW 4-40 X 1/2					
5		KEPNUT 4-40					
5		WASHER FLAT 4-40					
1		SCREW 4-40 X 5/16 (PHILLIPS HD)					
1		SCREW 4-40 X 7/16					
1		SCREW 4-40 X 1/2 (PHILLIPS HD)					
1		RES. 22 1/4W 5%					

IC TYPE	GND	+5V
301A	4	7
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE		
IC PIN LOCATIONS		

FIRST USED ON OPTION MODEL
RX01

ETCH BOARD REV. D

PARTS LIST

DATE 11/27/74
CHK'D 1/18/75
ENG 1/24/75
PROJ ENG 1/24/75
DATE 1/24/75
NEXT HIGHER ASSY

digital

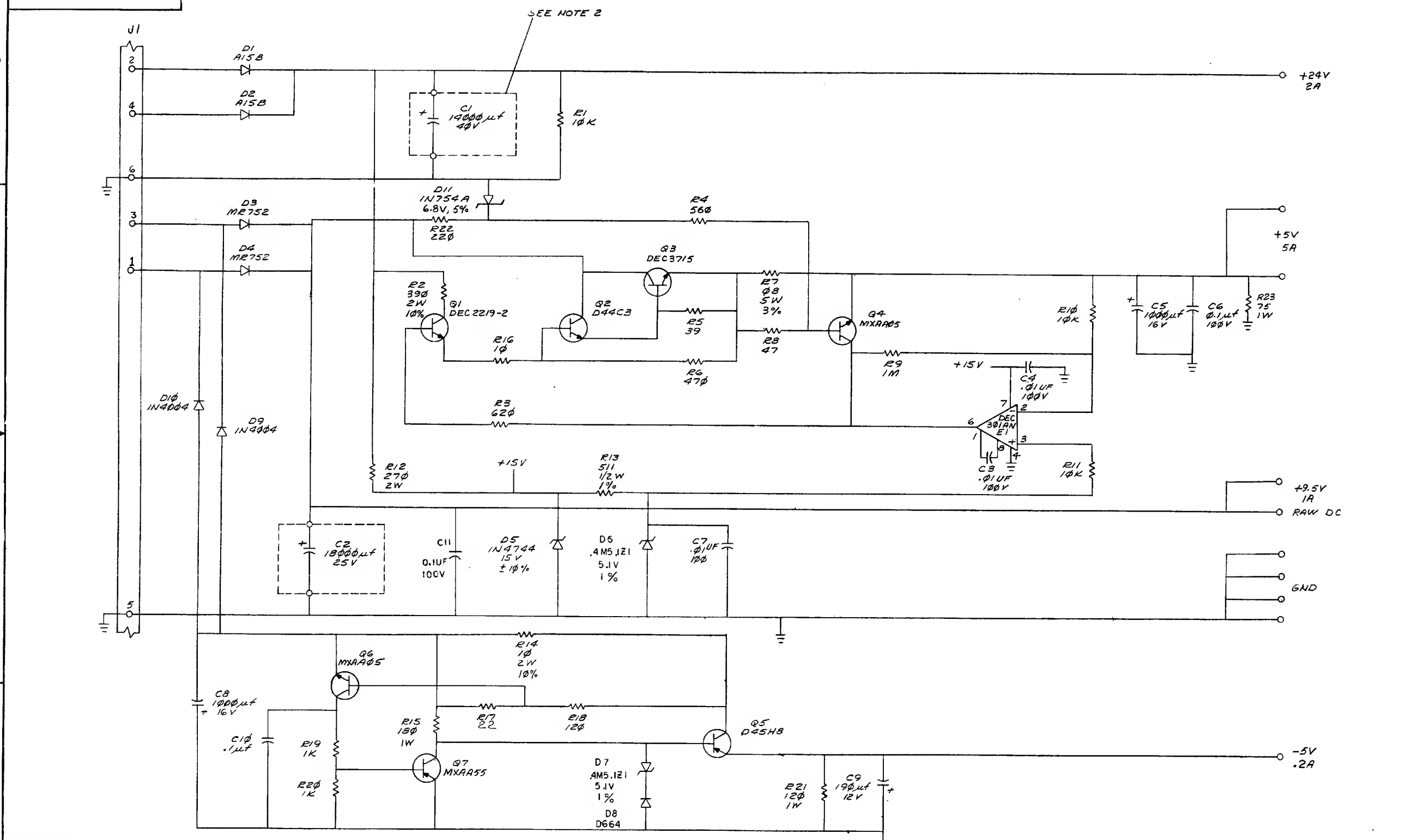
TITLE
RX01
POWER SUPPLY

SEMICONDUCTOR CONVERSION CHART

SIZE CODE
D CS 5411398-0-1
NUMBER
REV. E

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DCS 5411398-0-1



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE: RXOI POWER SUPPLY
 SCALE: 1:1
 SHEET: 2 OF 2
 NUMBER: DCS 5411398-0-1
 REV: E

THIS IS PRINT SET

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[illegible][illegible]

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UNIT VARIATIONS

[illegible]

REVISIONS	REV.												
	CHANGE NO.												
	CHK												
	USED ON OPTION/MODEL	DRN. m. Daniel	DATE 3 JUN 78	TITLE <div>digital</div> RX01 PLENUM/FAN ASSY.									
	RX01	CHK'D. E. Remond	DATE 5 JUN 78										
		PROJ. ENG. H. Drah (DP)	DATE 6-7-78	SIZE B	CODE DD	NUMBER 7015622-0				REV			
		PROD. W Brown (DP)	DATE 6-7-78	DIST.									
	SHEET 1 OF 2												

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DRAWING DIRECTORY

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B-DD-11/03-0DRAWING DIRECTORY 11/03 (sheet 1 only)

E-UA-11/03-0-0UNIT ASSEMBLY 11/03

C-PL-11/03-0-0UNIT ASSEMBLY 11/03 (PL)

C-MU-11/03-0-3MODULE UTILIZATION

C-MU-11/03-0-4MODULE UTILIZATION

C-MU-11/03-0-5MODULE UTILIZATION

A-PL-11/03-0-6PROCESSOR VARIATION LIST

A-PL-11/03-0-1SHIPPING LIST

A-PL-KEV11-0-0EIS/FIS

B-DD-BA11-MBA11-M FIELD MAINTENANCE PRINT SET (COMPLETE)

THE FOLLOWING PRINT SETS ARE SHIPPED WITH THIS PRODUCT. THEY ARE NOT INCLUDED IN THIS PRINT SET. REFER TO A-PL-11/03-0-1.

MP00049KD11-F FIELD MAINTENANCE PRINT SET
WITH VARIATIONS AA,AB,BA,BB,CA,CB,DA,DB,
EA,EB,FA,FB,GA,GB,HA,HB,KA,KB,MA,MB,KC

MP00495KD11-HA FIELD MAINTENANCE PRINT SET
WITH VARIATIONS SE,SF,SC,SD

B-DD-MMV11-AMMV11-A FIELD MAINTENANCE PRINT SET (COMPLETE)
WITH VARIATIONS BA,BB,DA,DB,FA,FB,HA,HB

MP00259MSV11-C FIELD MAINTENANCE PRINT SET
WITH VARIATIONS KA,KB,MA,MB

MP00566MSV11-D FIELD MAINTENANCE PRINT SET
WITH VARIATIONS SE,SF,SC,SD,KC

MP00055DLV11 FIELD MAINTENANCE PRINT SET
WITH VARIATIONS AA,AB,BA,BB,CA,CB,DA,DB

UNIT VARIATIONS

VAR	TITLE
11/03-AA	KD11-F, BA11-MA, DLV11, 115V
11/03-AB	KD11-F, BA11-MB, DLV11, 230V
11/03-BA	KD11-J, BA11-MA, DLV11, 115V
11/03-BB	KD11-J, BA11-MB, DLV11, 230V
11/03-CA	KD11-L, BA11-MA, DLV11, 115V
11/03-CB	KD11-L, BA11-MB, DLV11, 230V
11/03-DA	KD11-M, BA11-MA, DLV11, 115V
11/03-DB	KD11-M, BA11-MB, DLV11, 230V
11/03-EA	KD11-F, BA11-MA, 115V
11/03-EB	KD11-F, BA11-MB, 230V
11/03-FA	KD11-J, BA11-MA, 115V
11/03-FB	KD11-J, BA11-MB, 230V
11/03-GA	KD11-L, BA11-MA, 115V
11/03-GB	KD11-L, BA11-MB, 230V
11/03-HA	KD11-M, BA11-MA, 115V
11/03-HB	KD11-M, BA11-MB, 230V
11/03-KA	KD11-R, BA11-MA, 115V
11/03-KB	KD11-R, BA11-MB, 230V
11/03-MA	KD11-S, BA11-MA, 115V
11/03-MB	KD11-S, BA11-MB, 230V
11/03-SE	KD11-HA, KEV11, MSV11-DD,BA11-MA, 115V
11/03-SF	KD11-HA, KEV11, MSV11-DD,BA11-MB, 230
11/03-SC	KD11-HA, KEV11, MSV11-DC,BA11-MA,115V
11/03-SD	KD11-HA, KEV11, MSV11-DC, BA11-MB, 220V
11/03-KC	KD11-H,KEV11,MSV11-DD,BA11-MA,115V

REVISIONS

CHK	CHANGE NO.	REV.
	11/03-ML010	J
	RE VISED & REDRAWN	
	1103-ML011	K
	1103-ML012	L

USED ON OPTION/MODEL

11/03
SHEET 1 OF 3

DRN.	DATE	TITLE
P. RILEY	7/14/75	DRAWING DIRECTORY PDP 11/03
CHK'D.	DATE	
D.HEALY	9/10/75	
PROJ. ENG.	DATE	
A.COHAN	10/16/75	
PROD.	DATE	
D.DEROME	10/1675	

SIZE

CODE

NUMBER

REV

B

DD

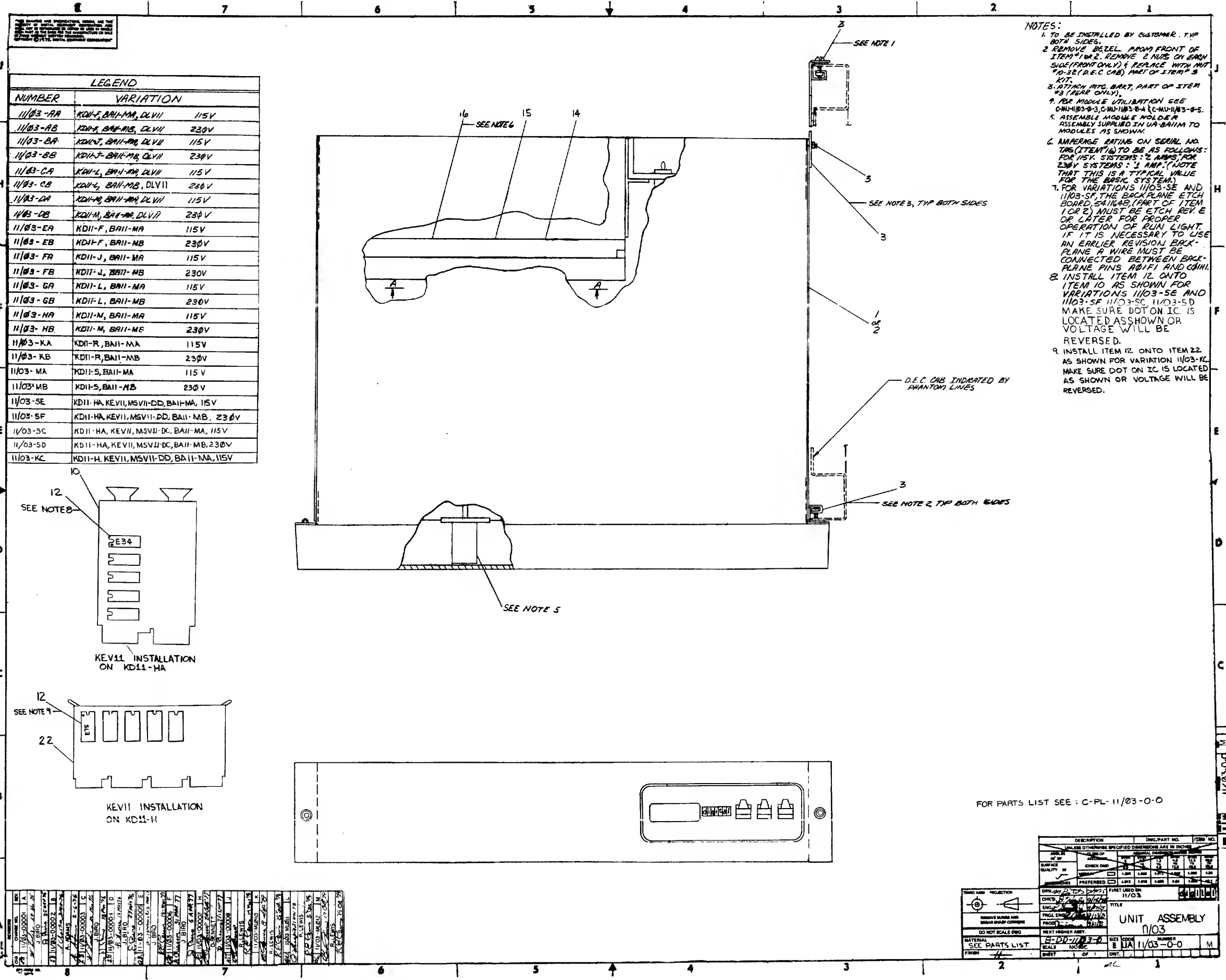
11/03-0

L

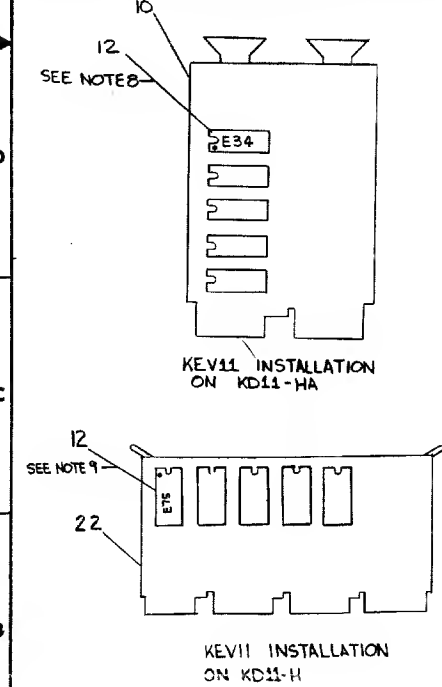
digital

DRB 106A

MP-N1103-C0



LEGEND		
NUMBER	VARIATION	
11/03-AA	KDII-F, BAII-MA, DLVII	115V
11/03-AB	KDII-F, BAII-MB, DLVII	230V
11/03-BA	KDII-T, BAII-MA, DLVII	115V
11/03-BB	KDII-T, BAII-MB, DLVII	230V
11/03-CA	KDII-L, BAII-MA, DLVII	115V
11/03-CB	KDII-L, BAII-MB, DLVII	230V
11/03-DA	KDII-M, BAII-MA, DLVII	115V
11/03-DB	KDII-M, BAII-MB, DLVII	230V
11/03-EA	KDII-F, BAII-MA	115V
11/03-EB	KDII-F, BAII-MB	230V
11/03-FA	KDII-J, BAII-MA	115V
11/03-FB	KDII-J, BAII-MB	230V
11/03-GA	KDII-L, BAII-MA	115V
11/03-GB	KDII-L, BAII-MB	230V
11/03-HA	KDII-M, BAII-MA	115V
11/03-HB	KDII-M, BAII-MB	230V
11/03-KA	KDII-R, BAII-MA	115V
11/03-KB	KDII-R, BAII-MB	230V
11/03-MA	KDII-S, BAII-MA	115V
11/03-MB	KDII-S, BAII-MB	230V
11/03-SE	KDII-HA, KEVII, MSVII-DD, BAII-MA, 115V	
11/03-SF	KDII-HA, KEVII, MSVII-DD, BAII-MB, 230V	
11/03-SC	KDII-HA, KEVII, MSVII-DC, BAII-MA, 115V	
11/03-SD	KDII-HA, KEVII, MSVII-DC, BAII-MB, 230V	
11/03-KC	KDII-H, KEVII, MSVII-DD, BAII-MA, 115V	



11/03-00001	11/03-00002	11/03-00003	11/03-00004	11/03-00005	11/03-00006	11/03-00007	11/03-00008	11/03-00009	11/03-00010	11/03-00011	11/03-00012	11/03-00013	11/03-00014	11/03-00015	11/03-00016	11/03-00017	11/03-00018	11/03-00019	11/03-00020	11/03-00021	11/03-00022	11/03-00023	11/03-00024	11/03-00025	11/03-00026	11/03-00027	11/03-00028	11/03-00029	11/03-00030	11/03-00031	11/03-00032	11/03-00033	11/03-00034	11/03-00035	11/03-00036	11/03-00037	11/03-00038	11/03-00039	11/03-00040	11/03-00041	11/03-00042	11/03-00043	11/03-00044	11/03-00045	11/03-00046	11/03-00047	11/03-00048	11/03-00049	11/03-00050	11/03-00051	11/03-00052	11/03-00053	11/03-00054	11/03-00055	11/03-00056	11/03-00057	11/03-00058	11/03-00059	11/03-00060	11/03-00061	11/03-00062	11/03-00063	11/03-00064	11/03-00065	11/03-00066	11/03-00067	11/03-00068	11/03-00069	11/03-00070	11/03-00071	11/03-00072	11/03-00073	11/03-00074	11/03-00075	11/03-00076	11/03-00077	11/03-00078	11/03-00079	11/03-00080	11/03-00081	11/03-00082	11/03-00083	11/03-00084	11/03-00085	11/03-00086	11/03-00087	11/03-00088	11/03-00089	11/03-00090	11/03-00091	11/03-00092	11/03-00093	11/03-00094	11/03-00095	11/03-00096	11/03-00097	11/03-00098	11/03-00099	11/03-00100
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FOR PARTS LIST SEE : C-PL-11/03-0-0

DESCRIPTION		UNCL. PART NO.	ITEM NO.
UNIT ASSEMBLY		11/03-0-0	1
REVISIONS		REVISIONS	
REV.	DESCRIPTION	DATE	BY
1	INITIAL DESIGN	11/03	1
2	REVISED FOR PARTS LIST	11/03	2
APPROVED		APPROVED	
DESIGNED BY	11/03-0-0	CHECKED BY	11/03-0-0
ENGINEER	11/03-0-0	PROJ. ENG.	11/03-0-0
DO NOT SCALE DIMS		DO NOT SCALE DIMS	
SEE PARTS LIST		SEE PARTS LIST	
FINISH		FINISH	

4

3

2

1

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ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	11/03-AA	11/03-AE	11/03-BB	11/03-BB	11/03-CA	11/03-CB	11/03-DA	11/03-DB	11/03-EA	11/03-EB	11/03-FA	11/03-FB	11/03-GA	11/03-GB	11/03-HA	11/03-HB	11/03-KA	11/03-KB	11/03-MA	11/03-MB	11/03-SE	11/03-SF	11/03-SC	11/03-SD	11/03-KC
1.	E-UA-BALL-M-Ø	BALL-MA	BOX, FRAME, +P.S. ASSY., 115V	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1
2.	E-UA-BALL-M-Ø	BALL-MB	BOX, FRAME, +P.S. ASSY., 230V	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1	
3.	A-PL-7011609-0-0	7011609	MOUNTING BRACKET KIT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
4.	A-PL-KD11-F-0	KD11-F	PROC/4K RAM MEM	1	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5.	A-PL-KD11-J-0	KD11-J	PROC/4K CORE MEM	-	-	1	1	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
6.	C-UA-KD11-L-0	KD11-L	PROC/4K RAM MEM/KEV11	-	-	-	-	1	1	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	
7.	C-UA-KD11-M-0	KD11-M	PROC/4K CORE MEM/KEV11	-	-	-	-	-	1	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	
8.	A-PL-KD11-R-0	KD11-R	PROC/16K MOS MEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	
9.	C-UA-KD11-S-0	KD11-S	PROC/16K MOS MEM/KEV11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	
10.	A-PL-KD11-HA-0	KD11-HA	DOUBLE HEIGHT PROC/NO MEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	
11.	A-PL-MSV11-D-0	MSV11-DD	32K MOS MEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	
12.	A-PL-KEV11-0-0	KEV11	EIS/FIS MICROM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	
13.	A-PL-DLV11-0-0	DLV11	SERIAL LINE UNIT	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
14.	A-DC-7416197-0-0	7416197-02	UL DECAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
15.	A-DC-7409478-0-0	7409478-00	PATENT DECAL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
16.	A-PS-3613210-0-0	3613210-00	SERIAL NUMBER TAG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
17.	A-SP-3700215-0-0	3700215-00	PACKAGING INSTRUCTIONS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
18.	C-MU-11/03-0-3		MODULE UTILIZATION	REF	REF	-	-	REF	REF	-	-	REF	REF	-	-	REF	REF	-	-	-	-	-	-	-	-	-	-	
19.	C-MU-11/03-0-4		MODULE UTILIZATION	-	-	REF	REF	-	-	REF	REF	-	-	REF	REF	-	-	REF	REF	-	-	-	-	-	-	-	-	
20.	C-MU-11/03-0-5		MODULE UTILIZATION	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	REF	REF	REF	REF	REF	REF	REF	REF	REF	
21.	A-PL-MSV11-D-0	MSV11-DC	16K MOS MEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22.	A-PL-KD11-H-0	KD11-H	PROC/NO MEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	

REV. K

11/03-MLO10

ORIGINATED

11/03-MLO11

21 NOV 78

R. LEWIS

11/03-MLO12

5 DEC 78

11/03-MLO13

17 OCT 79

R. LEWIS

11/03-MLO14

25 OCT 79

R. LEWIS

DRN

CHK'D

ENG.

PROJ. ENG.

PROD.

NEXT HIGHER ASSY.

B-DD-11/03-0

SCALE

SHEET

1

OF

1

FIRST USED ON

11/03

TITLE

UNIT ASSY.

11/03

SIZE

CODE

C

PL

NUMBER

11/03-0-0

REV.

M

DIST.

DEC FORM NO.

DRC 110 A

4

3

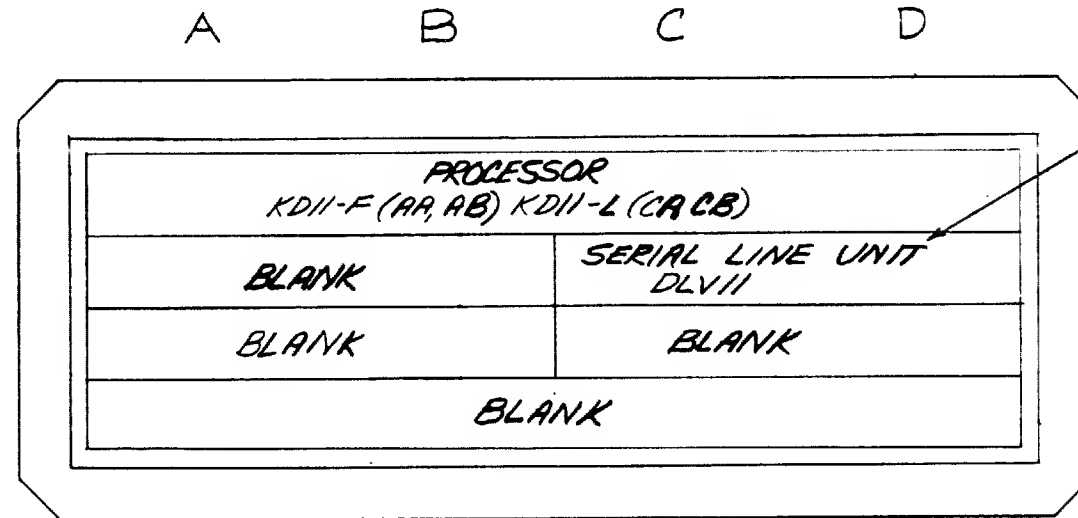
2

1

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NOTES:

1. THIS MODULE UTILIZATION WILL BE USED FOR: 11/03-AA, 11/03-AB, 11/03-CA, 11/03-CB, 11/03-EB, 11/03-EB, 11/03-GA, 11/03-GB
2. 11/03-EB, 11/03-EB, 11/03-GA, AND 11/03-GB DO NOT INCLUDE DLV-11.



SEE NOTE 2

VIEW FROM MODULE SIDE
OF BACKPLANE

REV.	CHANGE NO.	CHK
A	11/03-00001	J. BIRG
	12 Nov 73	
	25 Nov 75	

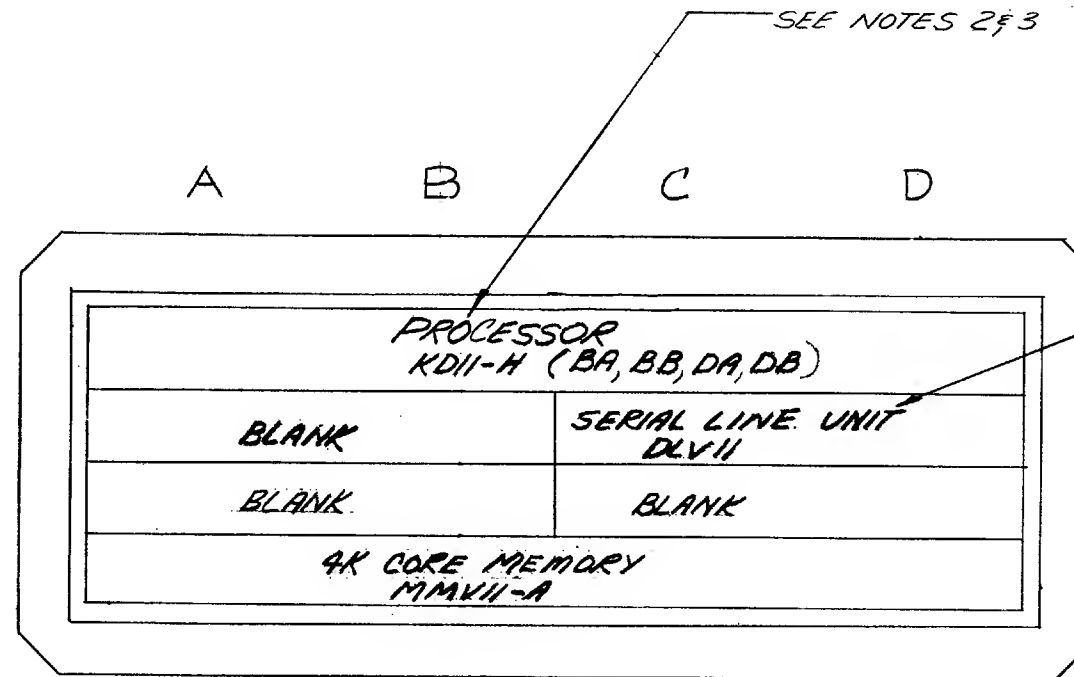
DEC FORM NO.
DEC 100-3

FIRST USED ON OPTION/MODEL 11/03		QTY.	DESCRIPTION	PART NO.	ITEM NO.
DIMENSIONAL TOLERANCE		PARTS LIST			
DIMENSIONS ARE MILLIMETERS INCHES UNLESS OTHERWISE SPECIFIED		DRN. <i>[Signature]</i>	DATE 9/25/73	digital	
MILLIMETERS X.XX ±0.10 X.X ±0.5 X ±2		ENG. <i>[Signature]</i>	DATE 9/25/73	TITLE MODULE UTILIZATION (11/03)	
THIRD ANGLE PROJECTION		PROD. <i>[Signature]</i>	DATE 9/25/73	REV. A	
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓		NEXT HIGHER ASSY.		SIZE CODE C MU	
MATERIAL FINISH		B-DD-11/03-0 SCALE SHEET 1 OF 1		NUMBER 11/03-0-3	

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NOTES:

1. THIS MODULE UTILIZATION WILL BE USED FOR: 11/03-BA, 11/03-BB, 11/03-DA, 11/03-DB, 11/03-FA, 11/03-FB, 11/03-HA, 11/03-HB.
2. KDII-H WITH MMVII-A BECOMES KDII-J.
3. KDII-H WITH MMVII-A AND KEVII BECOMES KDII-M.
4. 11/03-FA, 11/03-FB, 11/03-HA, AND 11/03-HB DO NOT INCLUDE DLVII.



VIEW FROM MODULE SIDE
OF BACK PLANE

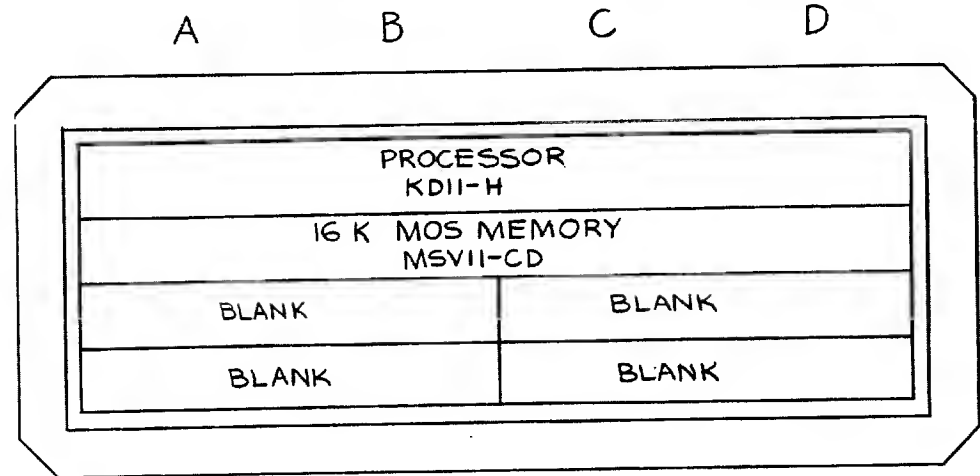
REVISIONS		REV.
CHK	CHANGE NO.	
28	11/03-00001	A
J. BIRRO		25 JUN 75

DEC FORM NO.
100-8

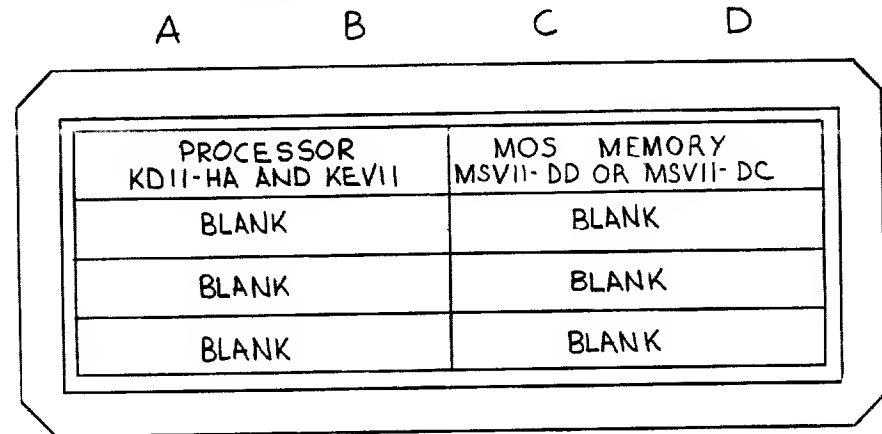
FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
11/03					
DIMENSIONAL TOLERANCE		PARTS LIST			
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED		DRN.	DATE	digital	
		CHK'D	DATE		
MILLIMETERS	INCHES	ENG.	DATE	MODULE UTILIZATION (11/03)	
X,XX ±0.10	.XXX ±.005	PROJ. ENG.	DATE		
X,X ±0.5	.XX ±.02	PROD.	DATE	B-DD-11/03-0	
X ±.2	.X ±.1	PROD.	DATE		
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.		SIZE CODE	NUMBER
				CMU	11/03-0-4
		SCALE		DIST.	
		SHEET 1 OF 1			

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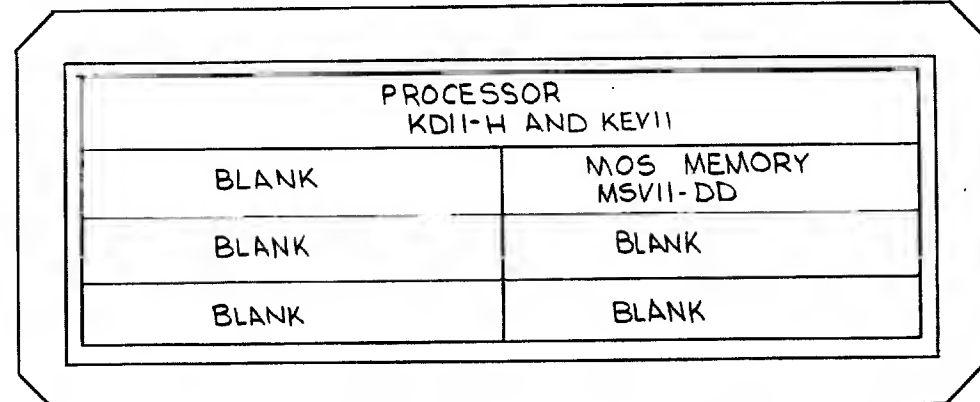
THIS MODULE UTILIZATION WILL BE USED FOR: 11/03-KA, 11/03-KB, 11/03-MA, 11/03-MB



THIS MODULE UTILIZATION WILL BE USED FOR: 11/03-SE, 11/03-SF, 11/03-SC, 11/03-SD



THIS MODULE UTILIZATION WILL BE USED FOR: 11/03-KC



VIEW FROM MODULE SIDE OF BACKPLANE

VIEW FROM MODULE SIDE OF BACK PLANE

REVISIONS		REV.	DATE	BY	APP.
CHK	CHANGE NO.	A	11/03-00006	A	
		B	11/03-00007	B	
		C	11/03-00008	C	
		D	11/03-00009	D	
		E	11/03-00010	E	
		F	11/03-00011	F	
		G	11/03-00012	G	
		H	11/03-00013	H	
		I	11/03-00014	I	
		J	11/03-00015	J	
		K	11/03-00016	K	
		L	11/03-00017	L	
		M	11/03-00018	M	
		N	11/03-00019	N	
		O	11/03-00020	O	
		P	11/03-00021	P	
		Q	11/03-00022	Q	
		R	11/03-00023	R	
		S	11/03-00024	S	
		T	11/03-00025	T	
		U	11/03-00026	U	
		V	11/03-00027	V	
		W	11/03-00028	W	
		X	11/03-00029	X	
		Y	11/03-00030	Y	
		Z	11/03-00031	Z	

THIRD ANGLE PROJECTION		DESCRIPTION		DWG./PART NO.	ITEM NO.
REMOVE BURRS AND BREAK SHARP CORNERS		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		11/03	
DO NOT SCALE DWG		NOMINAL DIMENSION RANGE INCHES		digital	
MATERIAL		TITLE		MODULE UTILIZATION	
FINISH		NEXT HIGHER ASSY.		(11/03)	
SCALE		SIZE CODE NUMBER		C MU 11/03-0-5	
SHEET 1 OF 1		DIST.		REV. E	

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

MADE BY	WALT SIZER	CHECKED	WALT SIZER	SECTION
DATE	9/29/75	DATE	9/29/75	1
ENG	ARNOLD COHAN	PROD	DON DEROME	ISSUED SECT.
DATE	10/17/75	DATE	10/17/75	2

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION
1	EB-15111-76	LSI-11, PDP-11/03 USER'S MANUAL
2	EB-04879-75	LSI-11, 11/03 PROCESSOR HANDBOOK
3	EH-04779-75	LSI-11 PROGRAMMING CARD
4	ZJV01-RB	LSI-11 BASIC DIAGNOSTIC KIT
5	MP-11/03	PDP-11/03 CUSTOMER PRINT SET
6	A-PL-7011609-0-0	11/03 MOUNTING BRACKET KIT
7	EB-06583-76	MICROCOMPUTER HANDBOOK
8	EB-15114-78	MICROCOMPUTER PROCESSORS HANDBOOK
9	EB-15115-78	MEMORIES AND PERIPHERALS HANDBOOK
10	MP00049	FD11-F FIELD MAINTENANCE PRINT SET
11	MP00495	FD11-HA FIELD MAINTENANCE PRINT SET
12	B-DD-MMV11-A (COM- PLETE)	MMV11-A FIELD MAINTENANCE PRINT SET
13	MP00259	MSV11-C FIELD MAINTENANCE PRINT SET
14	MP00566	MSV11-D FIELD MAINTENANCE PRINT SET
15	MP00055	DLV11 FIELD MAINTENANCE PRINT SET
		* NOTE: THESE ITEMS ARE ONLY TO BE
		SHIPPED WITH FIRST SHIP TO
		CUSTOMER.

TITLE	PDP 11/03 SHIPPING LIST	ASSY NO.	NONE	SIZE CODE	A PL	NUMBER	11/03-0-1	R	D	ECONO.	11/03 ML011
		SHEET	1	OF	2	DIST					

DEC FORM DEC 16 (325) 1031 N870
DRA 110

M/L

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

MADE BY	WALT SIZER	CHECKED	WALT SIZER	SECTION
DATE	9/29/75	DATE	9/29/75	2
ENG	ARNOLD COHAN	PROD	DON DEROME	ISSUED SECT.
DATE	10/17/75	DATE	10/17/75	2

ITEM NO.	DWG NO. / PART NO.	DESCRIPTION
1	EB-15111-76	LSI-11, PDP-11/03 USER'S MANUAL
2	EB-04879-75	LSI-11, 11/03 PROCESSOR HANDBOOK
3	EH-04779-75	LSI-11 PROGRAMMING CARD
4	ZJV01-RB	LSI-11 BASIC DIAGNOSTIC KIT
5	MP-11/03	PDP-11/03 CUSTOMER PRINT SET
6	A-PL-7011609-0-0	11/03 MOUNTING BRACKET KIT
7	EB-06583-76	MICROCOMPUTER HANDBOOK
8	EB-15114-78	MICROCOMPUTER PROCESSORS HANDBOOK
9	EB-15115-78	MEMORIES AND PERIPHERALS HANDBOOK
10	MP00049	FD11-F FIELD MAINTENANCE PRINT SET
11	MP00495	FD11-HA FIELD MAINTENANCE PRINT SET
12	B-DD-MMV11-A (COM- PLETE)	MMV11-A FIELD MAINTENANCE PRINT SET
13	MP00259	MSV11-C FIELD MAINTENANCE PRINT SET
14	MP00566	MSV11-D FIELD MAINTENANCE PRINT SET
15	MP00055	DLV11 FIELD MAINTENANCE PRINT SET

* NOTE: THESE ITEMS ARE ONLY TO BE
SHIPPED WITH FIRST SHIP TO
CUSTOMER.

TITLE	PDP 11/03 SHIPPING LIST	ASSY NO.	NONE	SIZE CODE	A PL	NUMBER	11/03-0-1	R	D	ECONO.	11/03 ML011
		SHEET	2	OF	2	DIST					

DEC FORM DEC 16 (325) 1031 N870
DRA 110

M/L

DIGITAL EQUIPMENT CORPORATION

MAYNARD, MASSACHUSETTS

PARTS LIST

MADE BY R. RILEY
DATE 7/11/75

CHECKED	D. HEALY
DATE	9/8/75

SECTION

DATE 7/11/75
ENG *Conrad P. C.*

DATE	9/8/75
PROD	Don DeFazio
DATE	10-16-75

ISSUED SECT.	1
--------------	---

ITEM NO.	DWG NO. / PART NO.
----------	--------------------

DESCRIPTION

~~1-23091A5-01~~

~~MICROM MOS CHIP~~

2	23003B5
---	---------

MICROM MOS CHIP

3	A-PS-9905812-0-0
---	------------------

BOX, PAPER SET-UP WITH FOAM

IF 23003B5 IS NOT AVAILABLE,
USE 23091A5-01.

TITLE

MICROM EIS , FIS OPTION

ASSY NO. NONE

SIZE	CODE
A	PL

NUMBER

REV.
D

ECO NO.
KEVII-
00005

DEC FORM DEC 16-(325)-1031-N870
DRA 110

SHEET 1 OF 1

DIST.

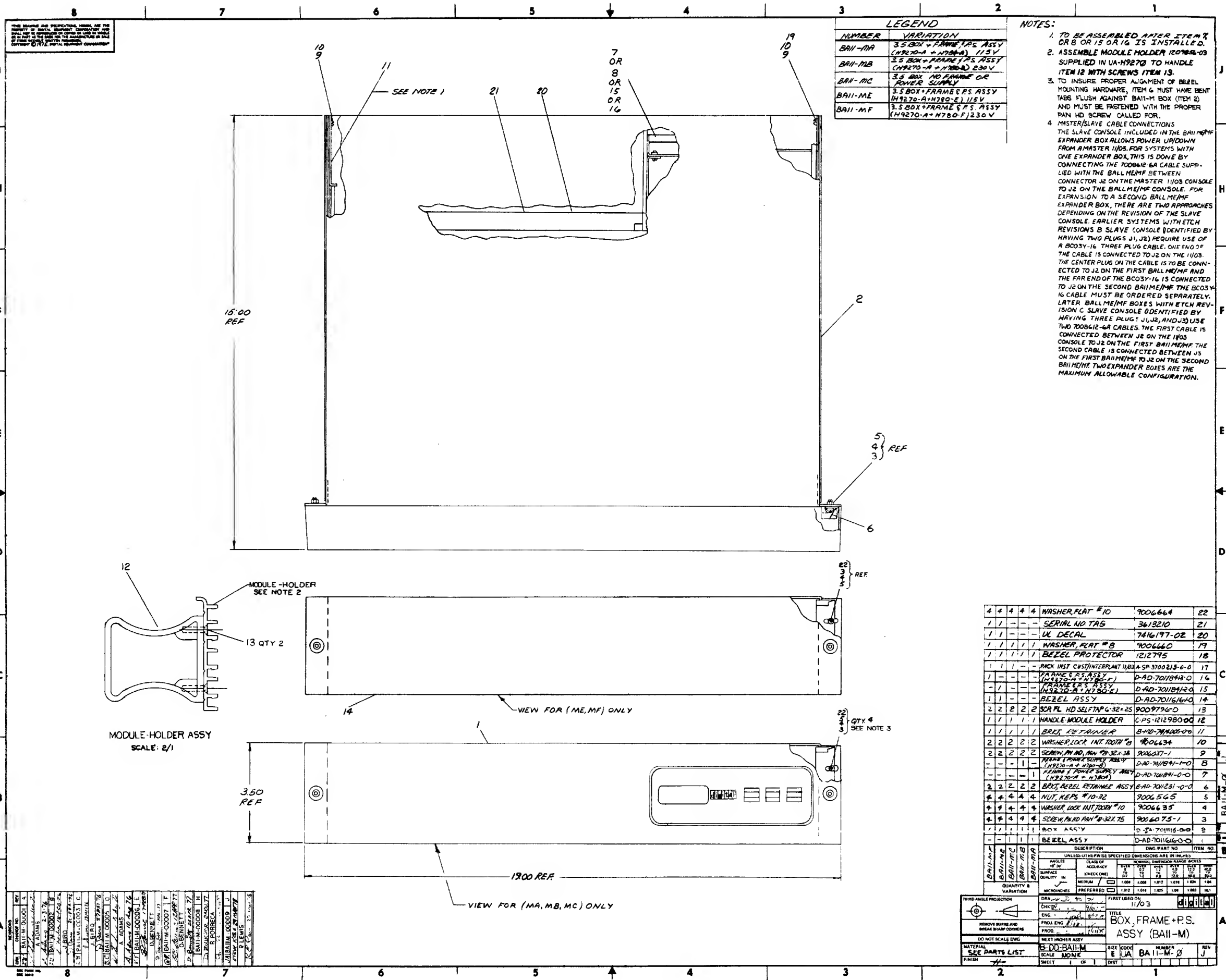
THIS IS PRINT SET

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SEQUENCE 70

[illegible]

EN 01062-1A-16-R972-(325)	REVISONS		CHG. NO.	REV															
	DATE	JAN 76	BAIL-M-1	A															
		FEB 76	BAIL-M-2	B															
		5-76	BAIL-M-3	C															
		5-76	BAIL-M-4	D															
		8-76	BAIL-M-5	E															
		2-77	BAIL-M-6	F															
		4-77	BAIL-M-7	H															
		3-78	BAIL-M-9	J															
		8-78	BAIL-M-10	K															



LEGEND	
NUMBER	VARIATION
BAII-MA	3.5 BOX + FRAME P.S. ASSY (H9270-A + H780-A) 115V
BAII-MB	3.5 BOX + FRAME P.S. ASSY (H9270-A + H780-A) 230V
BAII-MC	3.5 BOX NO FRAME OR POWER SUPPLY
BAII-ME	3.5 BOX + FRAME P.S. ASSY (H9270-A + H780-E) 115V
BAII-MF	3.5 BOX + FRAME P.S. ASSY (H9270-A + H780-F) 230V

- NOTES:
1. TO BE ASSEMBLED AFTER ITEM 7 OR 8 OR 15 OR 16 IS INSTALLED.
 2. ASSEMBLE MODULE HOLDER 120785-03 SUPPLIED IN UA-H9270 TO HANDLE ITEM 12 WITH SCREWS ITEM 13.
 3. TO INSURE PROPER ALIGNMENT OF BEZEL MOUNTING HARDWARE, ITEM 6 MUST HAVE BENT TABS FLUSH AGAINST BAII-M BOX (ITEM 2) AND MUST BE FASTENED WITH THE PROPER PAN HD SCREW CALLED FOR.
 4. MASTER/SLAVE CABLE CONNECTIONS
THE SLAVE CONSOLE INCLUDED IN THE BAII-ME/MF EXPANDER BOX ALLOWS POWER UP/DOWN FROM A MASTER 11/03. FOR SYSTEMS WITH ONE EXPANDER BOX, THIS IS DONE BY CONNECTING THE 700642-6A CABLE SUPPLIED WITH THE BAII-ME/MF BETWEEN CONNECTOR J2 ON THE MASTER 11/03 CONSOLE TO J2 ON THE BAII-ME/MF CONSOLE. FOR EXPANSION TO A SECOND BAII-ME/MF EXPANDER BOX, THERE ARE TWO APPROACHES DEPENDING ON THE REVISION OF THE SLAVE CONSOLE. EARLIER SYSTEMS WITH ETCH REVISIONS B SLAVE CONSOLE IDENTIFIED BY HAVING TWO PLUGS J1, J2 REQUIRE USE OF A BC03Y-16 THREE PLUG CABLE, ONE END OF THE CABLE IS CONNECTED TO J2 ON THE 11/03. THE CENTER PLUG ON THE CABLE IS TO BE CONNECTED TO J2 ON THE FIRST BAII-ME/MF AND THE FAR END OF THE BC03Y-16 IS CONNECTED TO J2 ON THE SECOND BAII-ME/MF. THE BC03Y-16 CABLE MUST BE ORDERED SEPARATELY. LATER BAII-ME/MF BOXES WITH ETCH REVISION C SLAVE CONSOLE IDENTIFIED BY HAVING THREE PLUGS J1, J2, AND J3 USE TWO 700642-6A CABLES. THE FIRST CABLE IS CONNECTED BETWEEN J2 ON THE 11/03 CONSOLE TO J2 ON THE FIRST BAII-ME/MF. THE SECOND CABLE IS CONNECTED BETWEEN J3 ON THE FIRST BAII-ME/MF TO J2 ON THE SECOND BAII-ME/MF. TWO EXPANDER BOXES ARE THE MAXIMUM ALLOWABLE CONFIGURATION.

4	4	4	4	4	WASHER, FLAT #10	700666-4	22
1	1	-	-	-	SERIAL NO. TAG	3613210	21
1	1	-	-	-	UK DECAL	7416197-02	20
1	1	1	1	1	WASHER, FLAT #8	700666-0	19
1	1	1	1	1	BEZEL PROTECTOR	1212795	18
1	1	1	-	-	PACK INST CUST/INTERPLANT 11/03A-SP 3700215-0-0		17
1	-	-	-	-	FRAME P.S. ASSY (H9270-A + H780-F)	D-AD-701184-0	16
-	1	-	-	-	FRAME P.S. ASSY (H9270-A + H780-E)	D-AD-701184-0	15
1	1	-	-	-	BEZEL ASSY	D-AD-7011616-0	14
2	2	2	2	2	SCR PL HD SELF TAP 6-32x25	9009796-0	13
1	1	1	1	1	HANDLE MODULE HOLDER	C-PS-12129800-0	12
1	1	1	1	1	BEZEL RETAINER	B-AD-701184-0	11
2	2	2	2	2	WASHER LOCK INT TOOTH #8	900663-4	10
2	2	2	2	2	SCREW PH NO. PAN 6-32x38	900637-1	9
-	-	1	-	-	FRAME (POWER SUPPLY) ASSY (H9270-A + H780-B)	D-AD-701184-0	8
-	-	1	-	-	FRAME (POWER SUPPLY) ASSY (H9270-A + H780-C)	D-AD-701184-0	7
2	2	2	2	2	BEZEL RETAINER ASSY	B-AD-701231-0-0	6
4	4	4	4	4	NUT, NPS #10-32	9006565	5
4	4	4	4	4	WASHER LOCK INT TOOTH #10	9006635	4
4	4	4	4	4	SCREW PH NO PAN #32x75	9006075-1	3
1	1	1	1	1	BOX ASSY	D-AD-701116-0-0	2
-	-	1	1	1	BEZEL ASSY	D-AD-7011616-0	1

QUANTITY & VARIATION	DESCRIPTION	QTY PART NO	ITEM NO
BAII-ME	BOX, FRAME + P.S. ASSY (BAII-M)	11/03	1
BAII-MC			2
BAII-MB			3
BAII-MA			4
BAII-ME			5
BAII-MF			6
BAII-ME			7
BAII-MF			8
BAII-ME			9
BAII-MF			10
BAII-ME			11
BAII-MF			12
BAII-ME			13
BAII-MF			14
BAII-ME			15
BAII-MF			16
BAII-ME			17
BAII-MF			18
BAII-ME			19
BAII-MF			20
BAII-ME			21
BAII-MF			22

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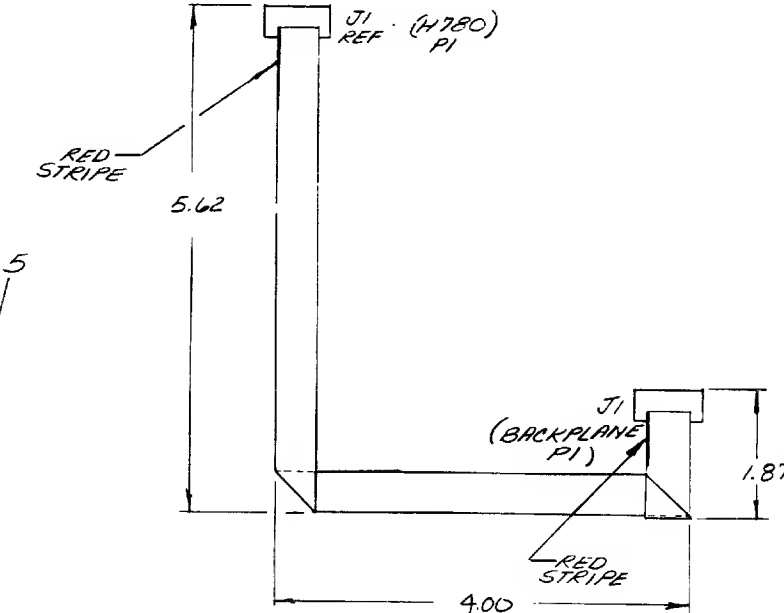
NOTES:

1. FOR WIRING INFO REFER TO D-AD-701145-0-0

6 OR 7
1 OR 2

CONSOLE FRAME
USED WITH (-0 AND -1)
VARIATIONS ONLY

3
4 QTY 2

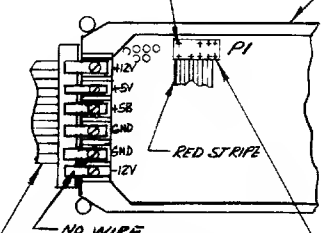


3
4 QTY 2

RED STRIPE

BACK PLANE ASS'Y
(D-AD-701145-0-0) REF
(SEE NOTE 1)

VIEW A-A
(CABLE TROUGH DELETED
FOR CLARITY)



CABLE POWER OUT
(D-IA-701589-0-0) REF
(FROM P4)
CABLE IS PART OF H780 RS

CABLE CONSOLE BACKPLANE REF
(D-IA-701411-0K-0)
SEE DETAIL B
(FROM P1)
CABLE IS PART OF H780 RS

1	-	-	-	H780-F SLAVE CON. 230V	E-UR-H780-F-0	7
-	1	-	-	H780-E SLAVE CON. 115V	E-UR-H780-E-0	6
1	1	1	1	FRAME ASSEMBLY	D-UR-H780-A-0	5
4	4	4	4	WASHER, INT. TOOTH #8	9006634-0	4
4	4	4	4	SCREW, PH HD, PAN #8-32 X .38	9006037-1	3
-	-	1	-	POWER SUPPLY 230V	E-UR-H780-B-0	2
-	-	-	1	POWER SUPPLY 115V	E-UR-H780-A-0	1

7011841-00	7011841-01	7011841-02	7011841-03	7011841-04	7011841-05	7011841-06	7011841-07	7011841-08	7011841-09	7011841-10	7011841-11	7011841-12	7011841-13	7011841-14	7011841-15	7011841-16	7011841-17	7011841-18	7011841-19	7011841-20	7011841-21	7011841-22	7011841-23	7011841-24	7011841-25	7011841-26	7011841-27	7011841-28	7011841-29	7011841-30	7011841-31	7011841-32	7011841-33	7011841-34	7011841-35	7011841-36	7011841-37	7011841-38	7011841-39	7011841-40	7011841-41	7011841-42	7011841-43	7011841-44	7011841-45	7011841-46	7011841-47	7011841-48	7011841-49	7011841-50	7011841-51	7011841-52	7011841-53	7011841-54	7011841-55	7011841-56	7011841-57	7011841-58	7011841-59	7011841-60	7011841-61	7011841-62	7011841-63	7011841-64	7011841-65	7011841-66	7011841-67	7011841-68	7011841-69	7011841-70	7011841-71	7011841-72	7011841-73	7011841-74	7011841-75	7011841-76	7011841-77	7011841-78	7011841-79	7011841-80	7011841-81	7011841-82	7011841-83	7011841-84	7011841-85	7011841-86	7011841-87	7011841-88	7011841-89	7011841-90	7011841-91	7011841-92	7011841-93	7011841-94	7011841-95	7011841-96	7011841-97	7011841-98	7011841-99	7011841-100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
QUANTITY & VARIATION		DESCRIPTION		DWG./PART NO.		ITEM NO.		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		CLAS-GE		ACCURACY		NOMINAL DIMENSION RANGE INCHES		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER		OVER	

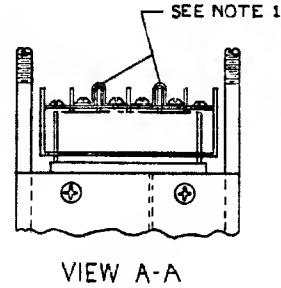
THIRD ANGLE PROJECTION	OR	2-5-75	FIRST USED ON	11/03	digital
REMOVE BURNS AND BREAK SHARP CORNERS	CHKD	2-15-75	ENG	2-15-75	
DO NOT SCALE DWG	PROJ. ENG.	2-15-75	PROJ. ENG.	2-15-75	
MATERIAL	B-DD-7011841-0-0	SIZE	CODE	NUMBER	REV.
SEE PARTS LIST	SCALE NONE	D-AD	7011841-0-0		A
FINISH	SHEET 1 OF 1	DIST.			

REV.	CHG.	NO.	DATE	BY	CHK.
1	1	1	12-16-76	J. BIRN	
2	2	2	12-16-76	J. BIRN	

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NOTES:

1. BEFORE ASSEMBLING CABLE THROUGH (7413849) TO H9270-0-0, REMOVE JUMPERS (9007589), QUANTITY 2, FROM TERMINAL BLOCK. REPLACE SCREWS TO TERMINAL BLOCK.
2. MANUFACTURING HAS THE OPTION TO USE 100° FLAT HEAD SCREW NO. 9008404-2 PLUS THREAD LOCKING COMPOUND NO. 900932; IN PLACE OF SCREW CALLED FOR.



3 (QTY 2)
7 (QTY 4)

5 (QTY 2)
SEE NOTE 2

9 (QTY 2)
4 (QTY 2)
6 (QTY 2)

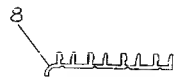
SEE NOTE 2

2	WASHER, LOCK, SPLIT #6	9007801-00	5
4	NUT, WING #6-32	9009711	7
2	SCR, PHL. PAN HD. #6-32 X .25	9006020-1	6
2	SCR, PHL. FLAT HD 100° CSK #6-32 X .31	9009730	5
2	CLAMP	C-MD-7416425-0-0	4
2	BAR, CABLE STRAIN RELIEF	B-MD-7413846-0-0	3
1	TROUGH, CABLE	D-IA-7413849-0-0	2
1	UNIT ASSY H9270	E-UA-H9270-0-0	1

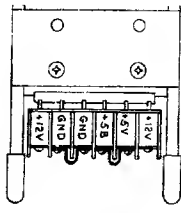
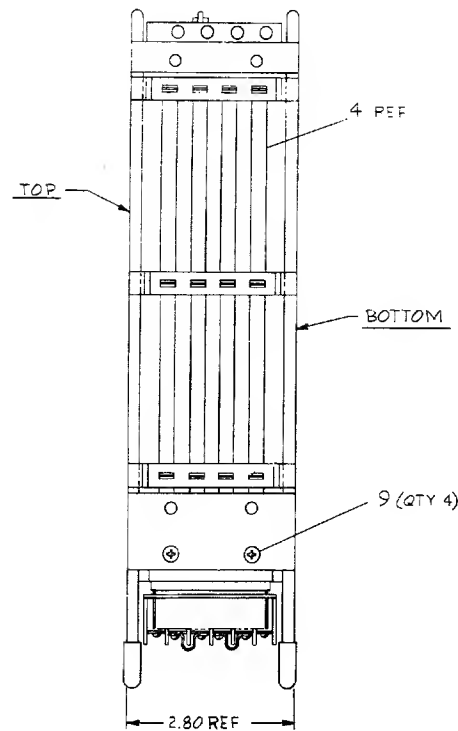
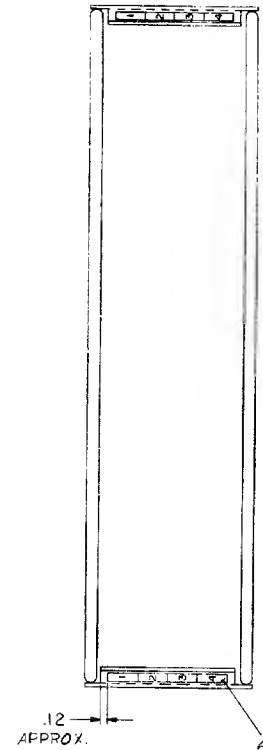
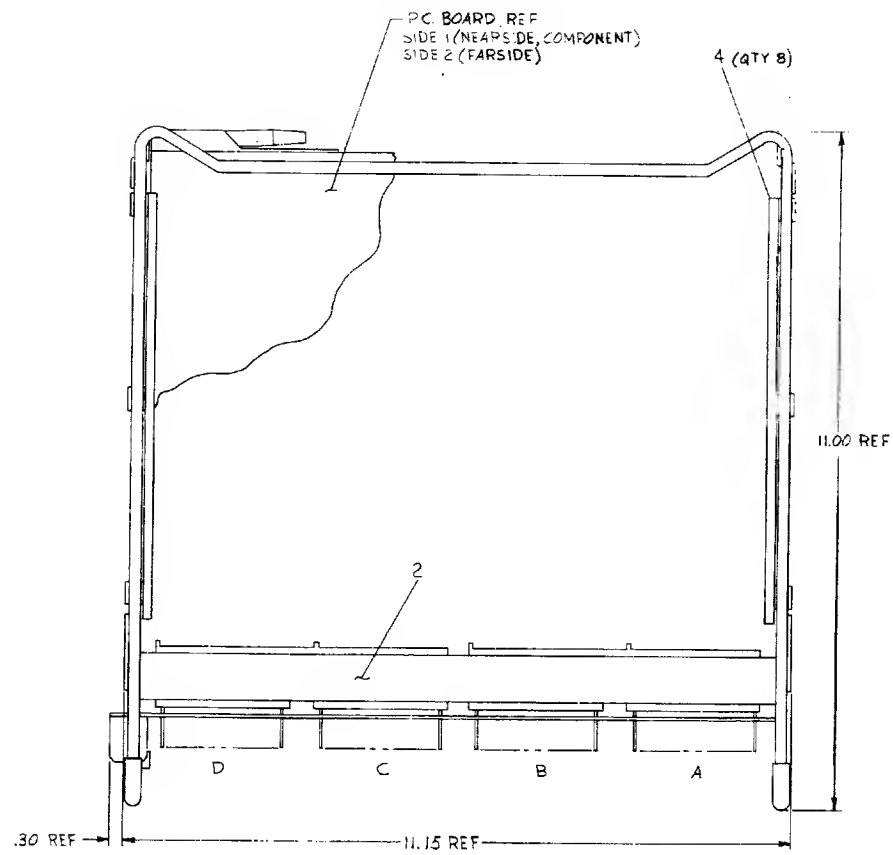
DESCRIPTION				DWG./PART NO.				ITEM NO.			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES											
ANGLES ±0° 30'		CLASS OF ACCURACY (CHECK ONE)		NOMINAL DIMENSION RANGE INCHES							
SURFACE QUALITY IN MICROINCHES	MEDIUM <input type="checkbox"/>	PREFERRED <input checked="" type="checkbox"/>	OVER 0 TO 0.2	OVER 0.2 TO 1.2	OVER 1.2 TO 4.0	OVER 4.0 TO 12.0	OVER 12.0 TO 48.0	OVER 48.0 TO 300.0	OVER 300.0 TO 1000.0		
			±.004	±.008	±.012	±.016	±.024	±.04	±.06	±.10	
			±.012	±.018	±.025	±.04	±.063	±.1	±.15	±.25	
DRN. J. Gentry 5-2-75				FIRST USED ON 1/03				Digital			
CHK'D. J. Gentry 7/1/75				TITLE							
ENG. R. Henth 6/29/75				FRAME ASSY							
PROJ. ENG. J. Gentry 7/31/75											
PROO. W. Henth 8/10/75											
NEXT HIGHER ASSY.											
B-DD-H9270-A				SIZE D		COOR UA		NUMBER H9270-A-0		REV F	
SCALE 1/1											
SHEET 1 OF 1											

REV	CHANGE NO.	DATE	BY	CHK
A	H9270-A-0001	12/1/75	J. BIRN	250075
B	H9270-A-0002	2/1/76	A. ADAMS	250076
C	H9270-A-0003	2/1/76	M.E. LEWANDOWSKI	250077
D	H9270-A-0004	2/1/76	P. PORRECA	250078
E	H9270-A-0005	2/1/76	D. BENNETT	250079
F	H9270-A-0006	2/1/76	P. PORRECA	250080
G	H9270-A-0007	2/1/76	P. PORRECA	250081

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SCALE: NONE



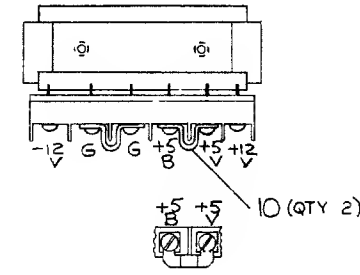
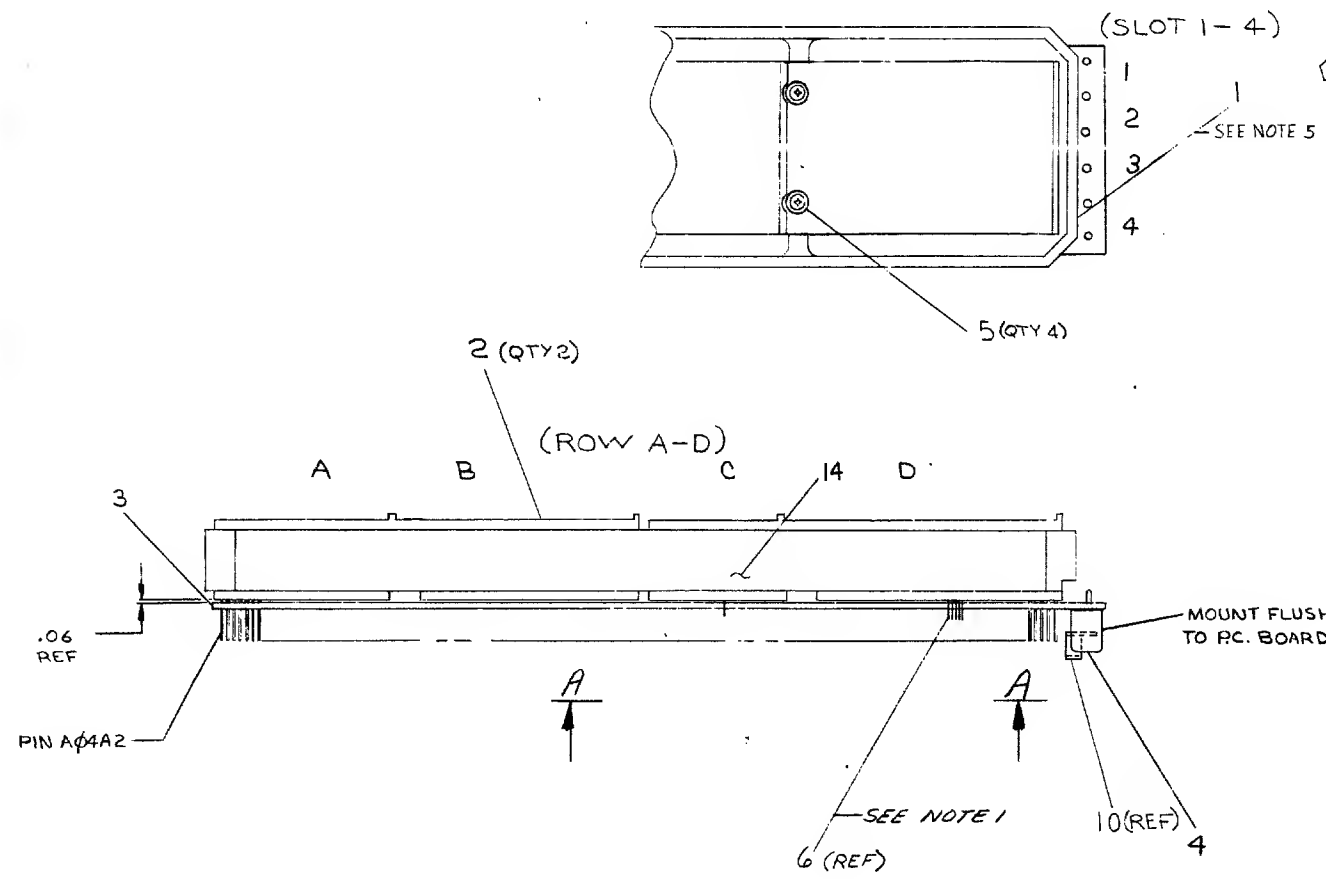
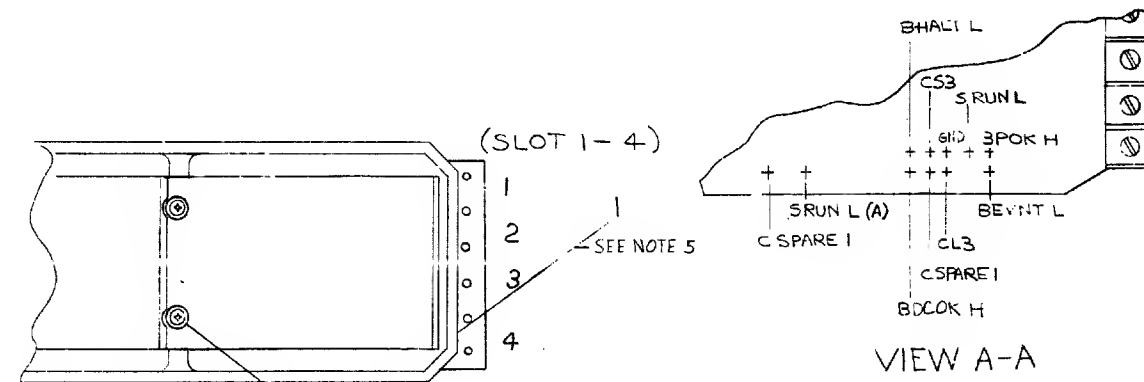
1	PACK INST H9270	A-SP-3700206-04	10
4	SCR, PH. HD FL NYLOC	9009730	9
1	MODULE HOLDER	ASP-1209856-03	8
1	PWR-DISTRIB. DECAL	ADC-7414311-00	7
2	SLOT NUMBERING DECAL	ADC-7414311-00	6
1	AWT REV STATUS LABEL	ADC-7414311-00	5
8	CARD GUIDE WHITE	APS-1212405-00	4
1	BACK PLANE ASSY	D-AD-7011145-00	2
1	CARD FRAME 22 MODULE	E-IA-7011047-00	1

THIRD ANGLE PROJECTION		DRW. DATE 4-18-75		FIRST USED ON 11/03	
CHECKED, NEATLY		7-7-75		TITLE UNIT ASSY H9270	
ENG. J. MALLS		7-7-75		PROJ. ENG. L. CORRY	
PROD. G. DEBOM		7-8-75		NEXT HIGHER ASST.	
DO NOT SCALE DIMS		SCALE 1/1		SIZE COOR. NUMBER 11/03	
MATERIAL SEE PARTS LIST		FINISH		DATE 11/03	

8		7			6		5		
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		ITEM DESCRIPTION		FROM		TO		SIGNAL	REMARKS
		NO	AWG	COLOR	POINT	CONN.	WITH		
		15	30	GREEN		DOIM1	WIRE WRAP	PIN 5 OF STAKED IN PINS (GND) WITH ONE TURN OF WIRE WRAP THEN SOLDER TACK	GND

NOTES:

1. ~~INSERT ITEM 1 ON PC BOARD BEFORE INSTALLING CO. BACK PLANE.~~
2. ~~REL WIRE WRAP EXCEPT THAT GOING TO THE TERMINAL LUG MUST BE APPLIED BEFORE THE AWT.~~
3. AWT SHOULD BE RUN BEFORE ITEMS 4 & 10 ARE ATTACHED.
4. #121025B IS AN ALLOWABLE SUBSTITUTION WHEN NO 121025B-01'S ARE AVAILABLE.
5. SAND CAST FRAME, NO. C-MD-7413493, CAN BE USED IN PLACE OF DIE CAST VERSION IF SUPPLY PROBLEM EXISTS.
6. IT IS IMPERATIVE THAT THE CONNECTION TO THE STAKED IN PIN BE MADE AS CLOSE TO THE ETCH BOARD AS POSSIBLE TO ALLOW A CONNECTOR TO SLIP DOWN ONTO THE PIN.
7. THIS WIRE IS REQUIRED ON 701145'S BUILT WITH ETCH REVISION D BOARDS ONLY.



ITEM NO.	DESCRIPTION	QTY	REV.
15	WIRE #30 AWG SOLID GRN	9105740-55	15
14	AWT REV STATUS LABEL	74-11881	14
13	WIRE #30 AWG SOLID (GRN)	9105740-55	13
12	WIRE #22 AWG SOLID (GRN)	9107688-55	12
11	TERM. RING INS. (RED)	9006701	11
10	JUMPER	9007589	10
9	AWT ETC H LIST	K-WL701145-0-1	9
8	AWT REV STATUS	A-WT-701145-0	8
7	CIRCUIT SCHEMATIC	D-CS-5411648-0-1	7
6	PHYS. STAKING PC. BD	9009142	6
5	SCREW, FIL HD POSI DR#8-32x.6	9006120-6	5
4	BARRIER TERM BOARD (GRN)	1212484-2	4
3	ETCH CIRCUIT BOARD ASSY.	5411648-0-1	3
2	288 PIN BLOCK (SLOTTED)	121025B-01	2
1	FRAME, BACKPLANE	C-MD-7413888-0-0	1

THIRD ANGLE PROJECTION		QUANTITY & VARIATION		DESCRIPTION		DWG. PART NO.		ITEM NO.	
REMOVE BURRS AND BREAK SHARP CORNERS <td colspan="2">DO NOT SCALE DWG <td colspan="2">MATERIAL <td colspan="2">SCALE <td colspan="2">SHEET </td></td></td></td>		DO NOT SCALE DWG <td colspan="2">MATERIAL <td colspan="2">SCALE <td colspan="2">SHEET </td></td></td>		MATERIAL <td colspan="2">SCALE <td colspan="2">SHEET </td></td>		SCALE <td colspan="2">SHEET </td>		SHEET	
FINISH <td colspan="2">NEXT HIGHER ASSY. <td colspan="2">E-VA-h 7270-0-0 <td colspan="2">D AD <td colspan="2">701145-0-0 </td></td></td></td>		NEXT HIGHER ASSY. <td colspan="2">E-VA-h 7270-0-0 <td colspan="2">D AD <td colspan="2">701145-0-0 </td></td></td>		E-VA-h 7270-0-0 <td colspan="2">D AD <td colspan="2">701145-0-0 </td></td>		D AD <td colspan="2">701145-0-0 </td>		701145-0-0	
SEE PARTS LIST <td colspan="2">SHEET 1 OF 1 <td colspan="2">SIZE <td colspan="2">CODE <td colspan="2">REV. </td></td></td></td>		SHEET 1 OF 1 <td colspan="2">SIZE <td colspan="2">CODE <td colspan="2">REV. </td></td></td>		SIZE <td colspan="2">CODE <td colspan="2">REV. </td></td>		CODE <td colspan="2">REV. </td>		REV.	
				H		H		H	

REV.	CHANGE NO.	DATE	BY	CHK	APP
A	1	7/1/75	M.E. LEWANDOWSKI		
B	2	7/1/75	M.E. LEWANDOWSKI		
C	3	7/1/75	M.E. LEWANDOWSKI		
D	4	7/1/75	M.E. LEWANDOWSKI		
E	5	7/1/75	M.E. LEWANDOWSKI		
F	6	7/1/75	M.E. LEWANDOWSKI		
G	7	7/1/75	M.E. LEWANDOWSKI		
H	8	7/1/75	M.E. LEWANDOWSKI		
I	9	7/1/75	M.E. LEWANDOWSKI		
J	10	7/1/75	M.E. LEWANDOWSKI		
K	11	7/1/75	M.E. LEWANDOWSKI		
L	12	7/1/75	M.E. LEWANDOWSKI		
M	13	7/1/75	M.E. LEWANDOWSKI		
N	14	7/1/75	M.E. LEWANDOWSKI		
O	15	7/1/75	M.E. LEWANDOWSKI		
P	16	7/1/75	M.E. LEWANDOWSKI		
Q	17	7/1/75	M.E. LEWANDOWSKI		
R	18	7/1/75	M.E. LEWANDOWSKI		
S	19	7/1/75	M.E. LEWANDOWSKI		
T	20	7/1/75	M.E. LEWANDOWSKI		
U	21	7/1/75	M.E. LEWANDOWSKI		
V	22	7/1/75	M.E. LEWANDOWSKI		
W	23	7/1/75	M.E. LEWANDOWSKI		
X	24	7/1/75	M.E. LEWANDOWSKI		
Y	25	7/1/75	M.E. LEWANDOWSKI		
Z	26	7/1/75	M.E. LEWANDOWSKI		

NOTES:

1978

PIN A01A1

PINACIAI

PINAØIAI

PIN A01A1

5011647E-P2

SIDE 2 EMI/CAS
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EMI RECORDS INC., NEW YORK, N.Y.

LAYER 1 POSITIVE

LAYER 2 NEGATIVE

LAYER 3 POSITIVE

LAYER 4 POSITIVE

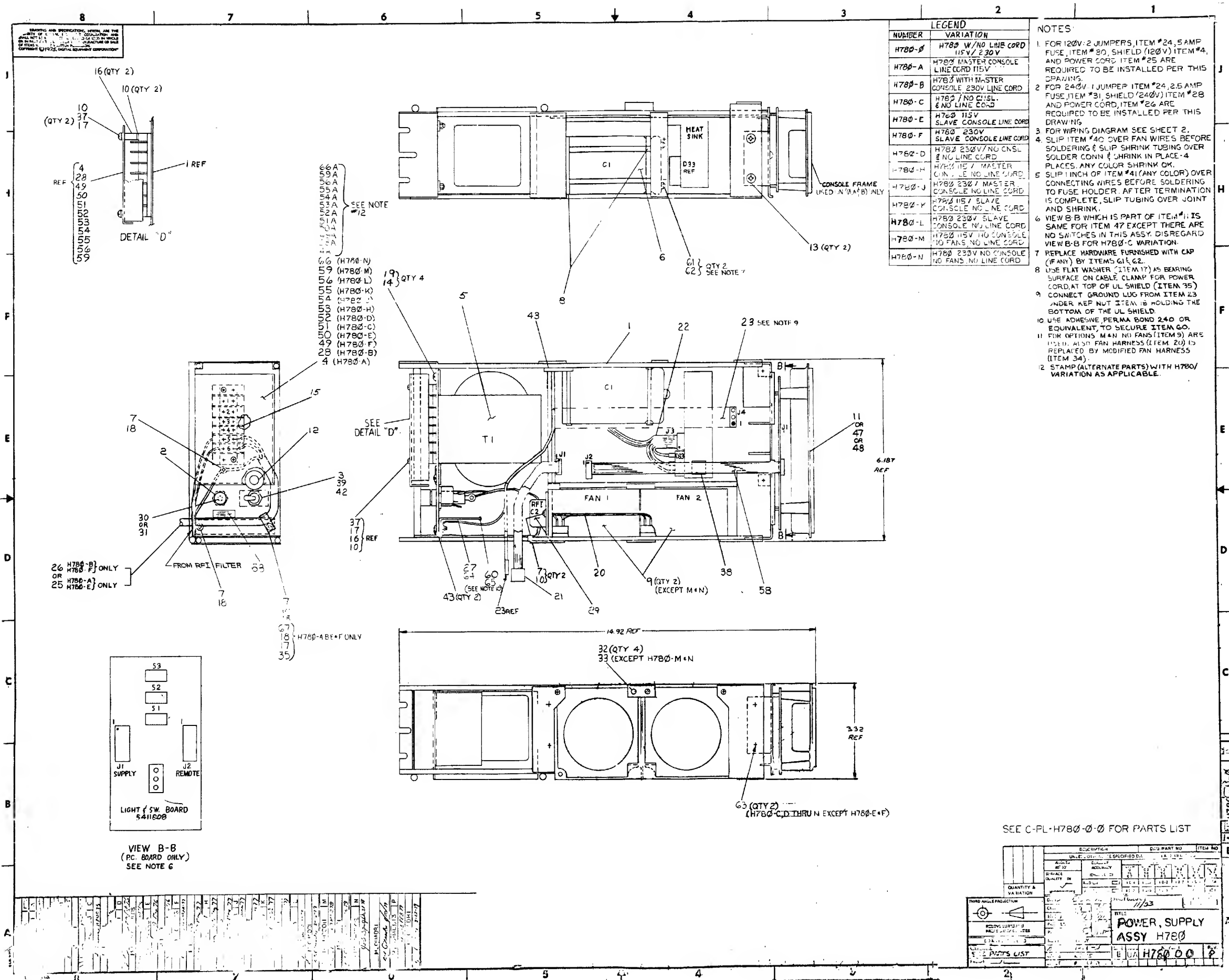
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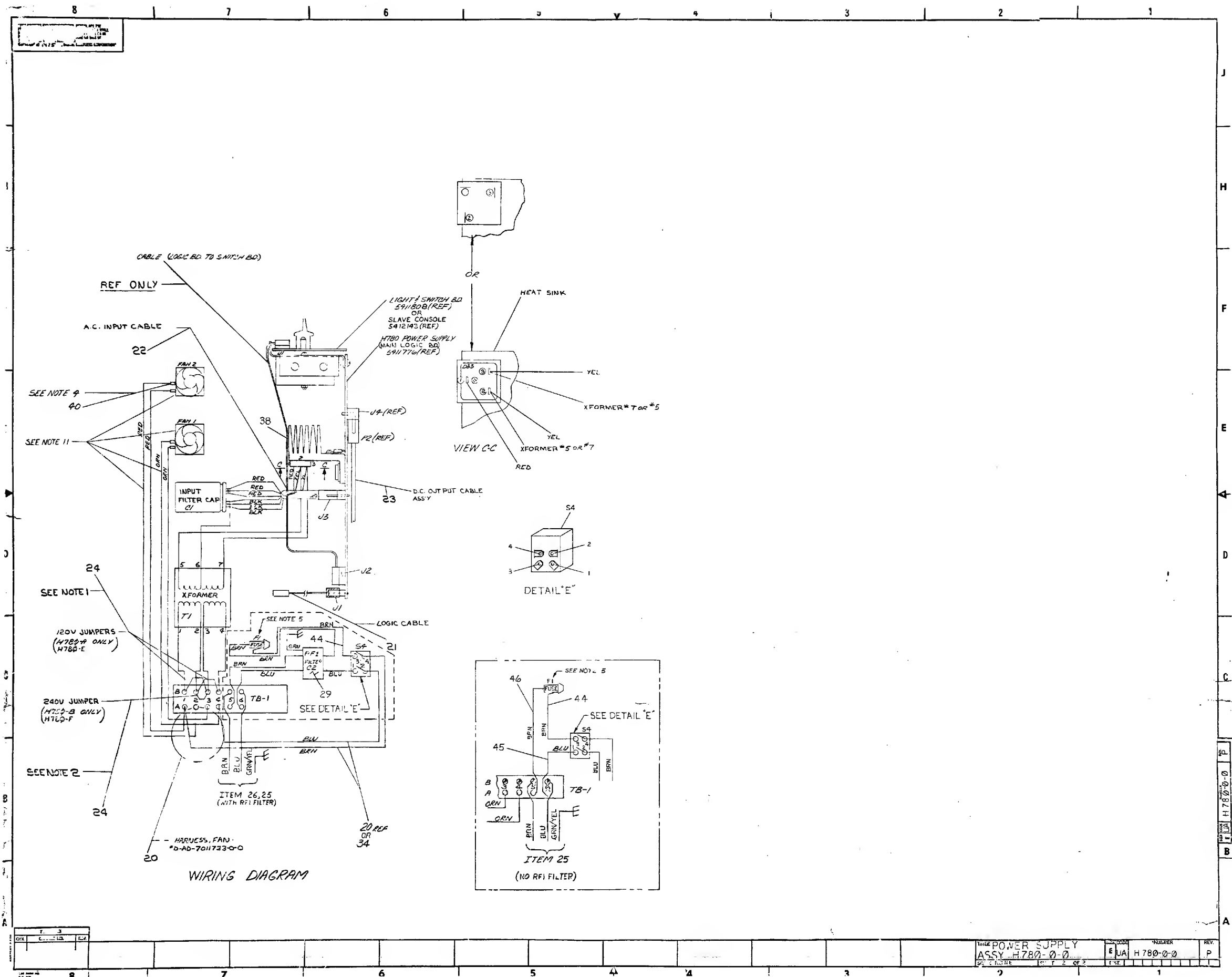
REF		DRILL & ETCH DRAWING	DMD501647-0-0	7
II		PIN STAKING(PC BOARD)	9009149	6
REF		AWT-REV STATUS	AWT-7011145-0	5
REF		MODULE ECO HISTORY	B-MH-5411648-06	4
REF		ASSY/DRILL HOLE LAYOUT	E-AH-5411648-0-5	3
REF		XY COORDINATE HOLE LOCATION	K-CO-5411648-0-4	2
I		ETCHED CIRCUIT BOARD	5011647	1

QTY.	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
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PARTS LIST

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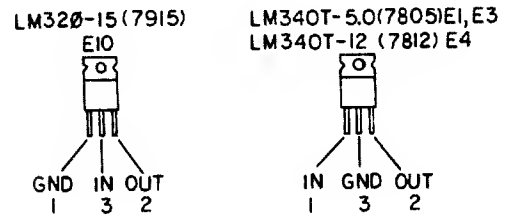
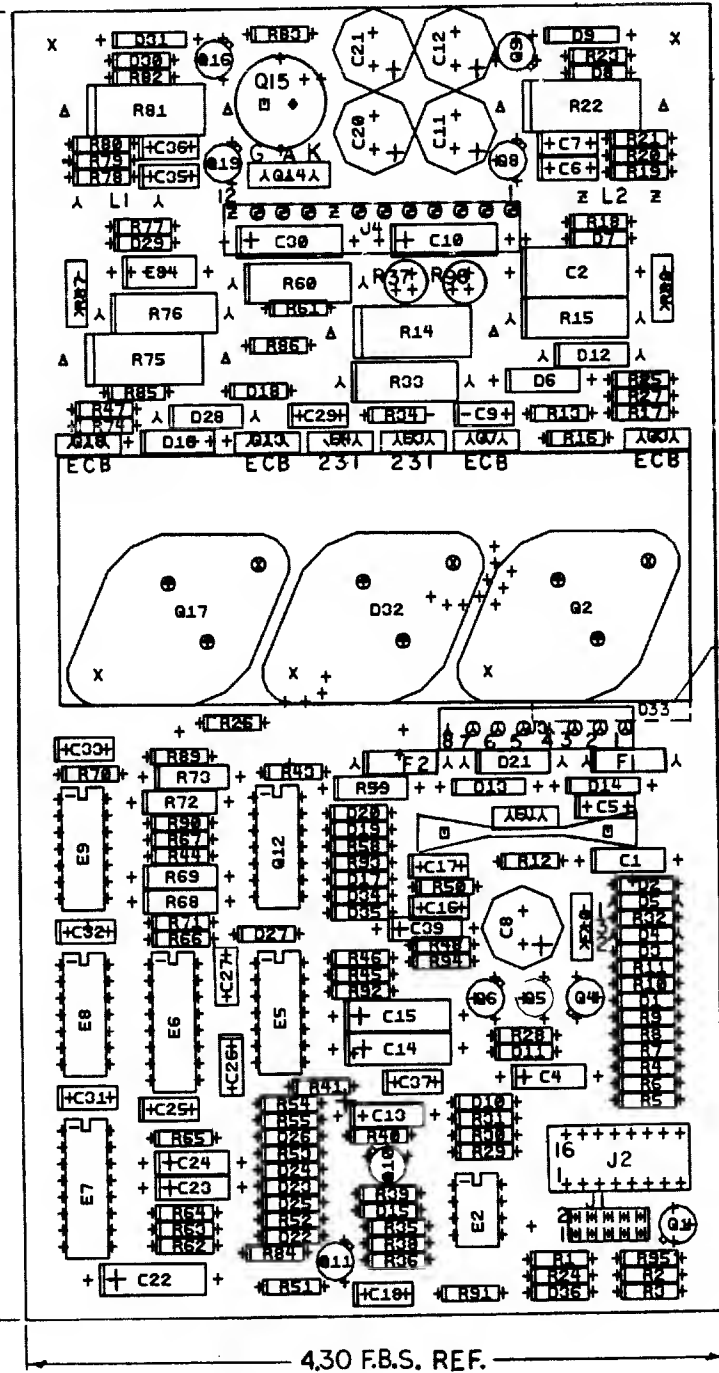
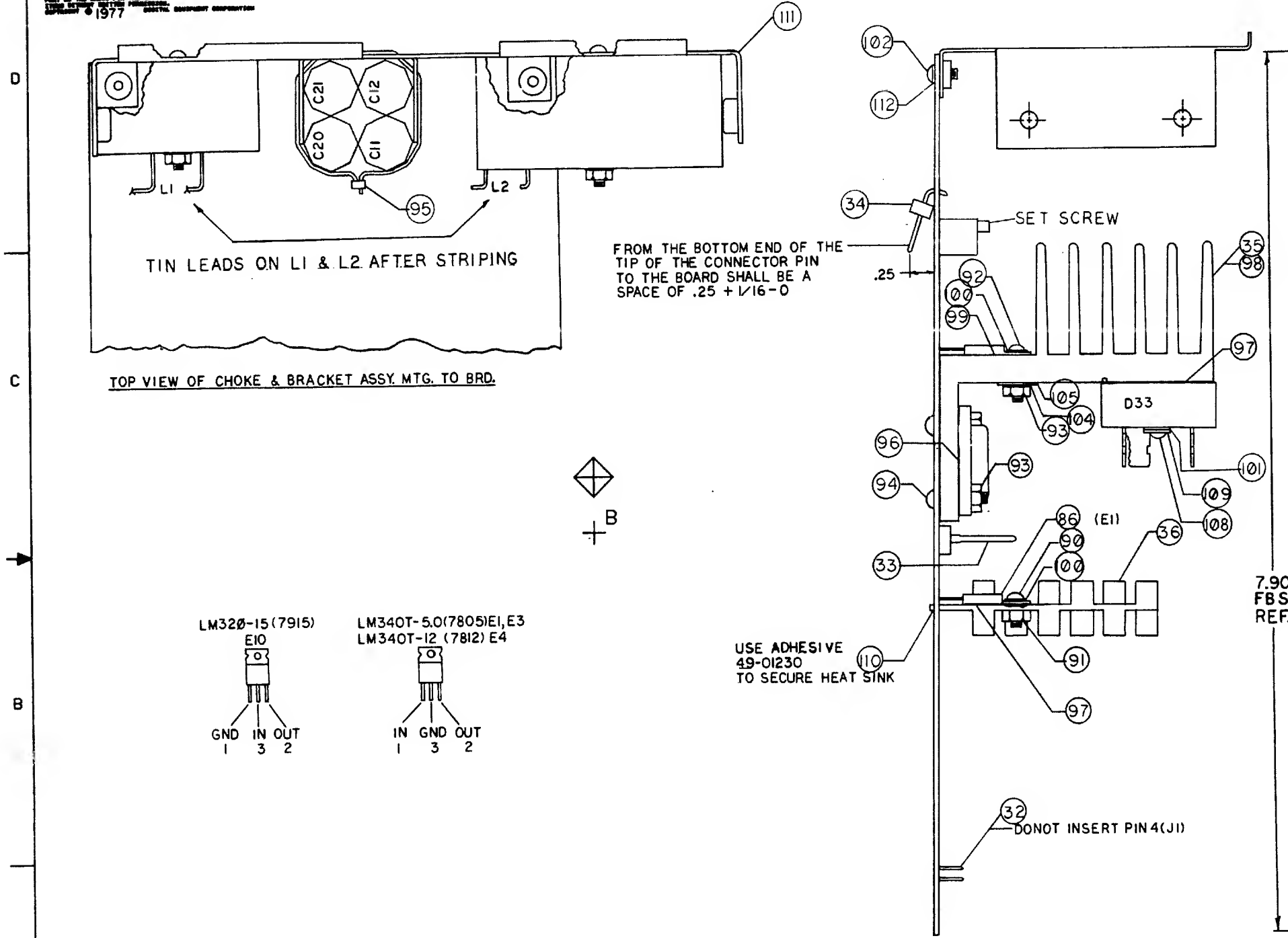




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Item No.	Dwg./Part No.	Description	H780-G	H780-A	H780-B	H780-C	H780-E	H780-F	H780-D	H780-H	H780-J	H780-K	H780-L	H780-M	H780-N																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

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COMPONENT SIDE VIEW



USE ADHESIVE 49-01230 TO SECURE HEAT SINK

- NOTES:
- 1. 8 HOLES .045 (+.005, -.005) MINIMUM ONLY
 - 2. R37 & R96 USE METAL TYPE ONLY
 - 3. MOUNT J4 ON SIDE 2

CHANGE NO	REV	DATE	BY	CHK	APP
1	1	11/17/76	13	N	
2	1	11/17/76	13	N	
3	1	11/17/76	13	N	
4	1	11/17/76	13	N	
5	1	11/17/76	13	N	
6	1	11/17/76	13	N	
7	1	11/17/76	13	N	
8	1	11/17/76	13	N	
9	1	11/17/76	13	N	
10	1	11/17/76	13	N	

ETCH REV. D-P3	DP3
P.C. DESIGN DATA BRSE REV.	DP3

SIGNATURES	DATE	TITLE
DRN. <i>Andy Swartz</i>	6-27-76	H780 POWER SUPPLY
CHK'D. <i>E. J. ...</i>	7-14-76	
ENG. <i>F. ...</i>	7-27-76	
PRD. ENG. <i>Mike ...</i>	7-27-76	
PRD. R. <i>...</i>	7-27-76	
SCALE 2/1		
SHT. 1 OF 3		
NEXT HIGHER ASSY. B-DD-5411776-0		

digital

H780 POWER SUPPLY

SIZE CODE NUMBER REV

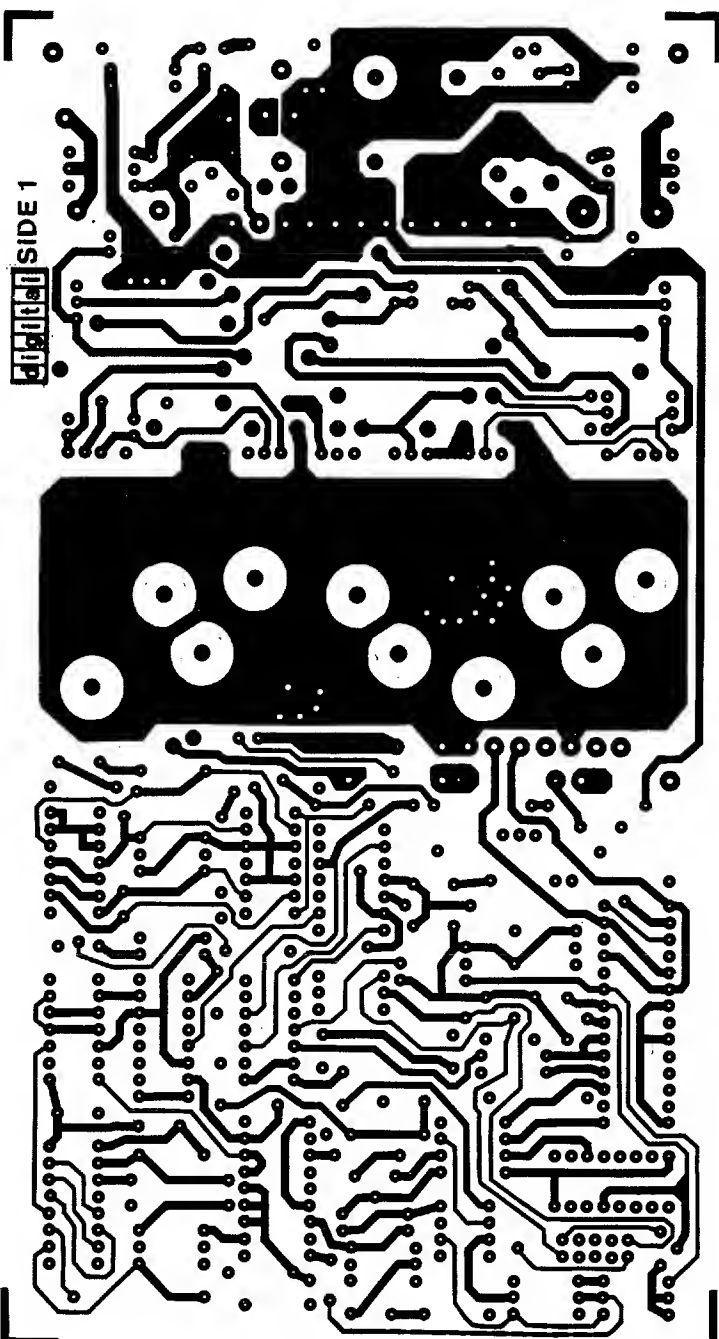
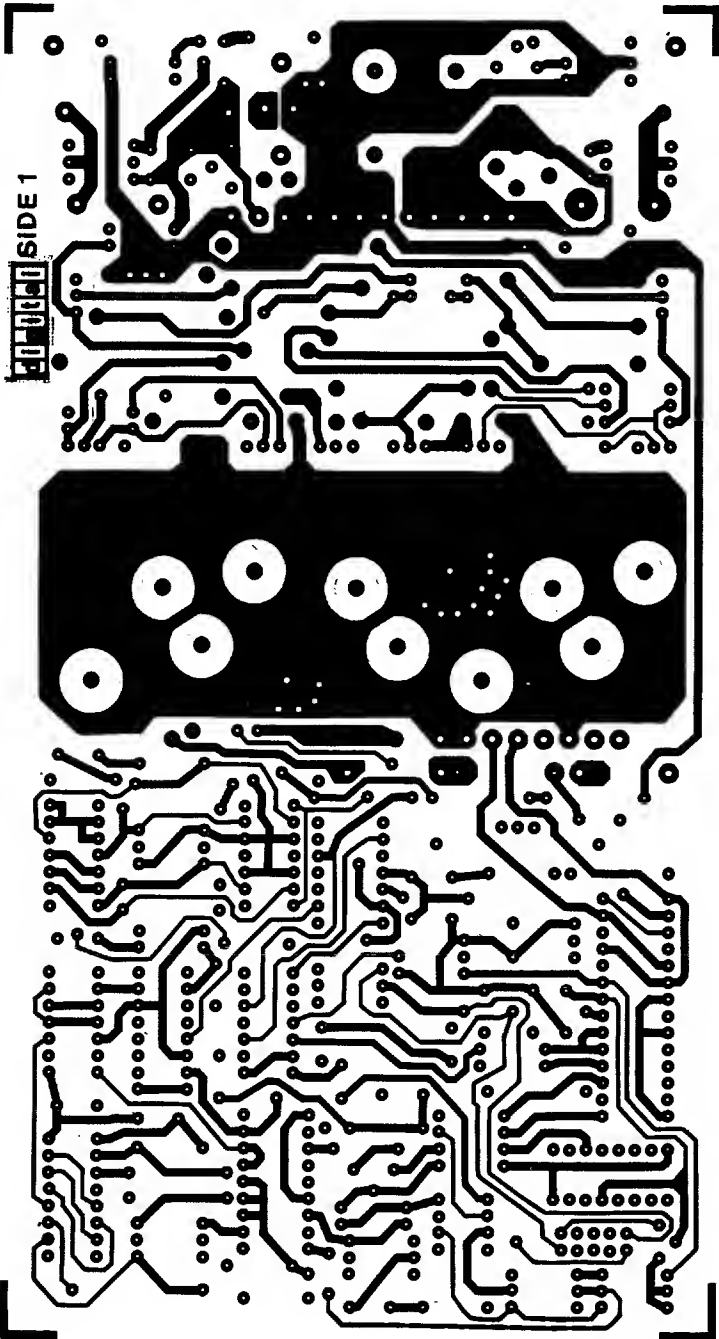
UA 5411776-0-0 P

1 MS#

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5011775D-P3 5411776

5011775D-P3 5411776

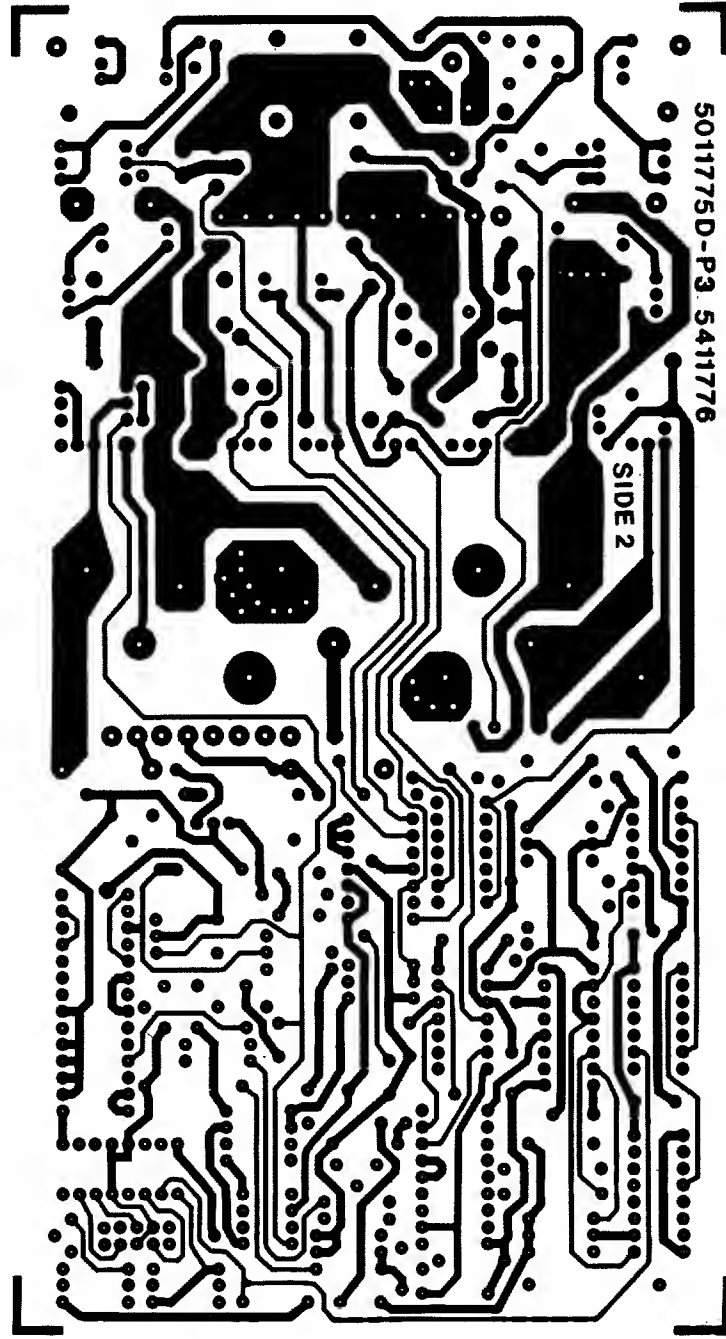
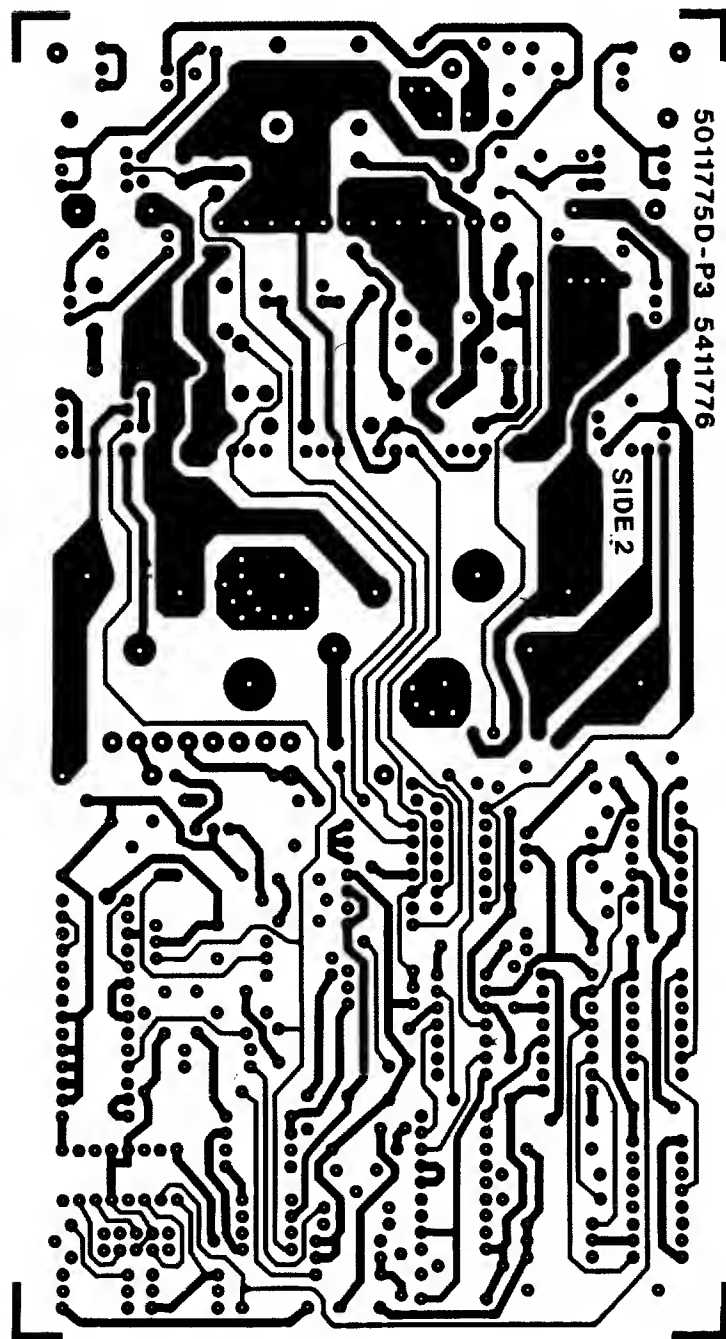


VIEWED FROM SIDE 1

REVISIONS		
CHK	CHANGE NO.	REV

TITLE		SIZE	CODE	NUMBER		REV.
H780 POWER SUPPLY		D	UA	5411776-0-0		P
SCALE 2:1		SHEET 2 OF 3		DIST.		

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VIED FROM SIDE 2

REVISIONS		
CHK	CHANGE NO	REV

TITLE		SIZE CODE	NUMBER	REV.
H780 POWER SUPPLY		D UA	5411776 -0-0	P
SCALE	2:1	SHEET	3 OF 3	DIST.

LINE ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION 00	REFERENCE DESIGNATOR
1	1	5011775-00	54-11776	1	
2	2	1000064-00	3.9MFD 10V 10% 150D S.TA	1	C23
3	3	1000076-00	39 MFD 10V 10% 150D S.TA	3	C10,C22,C30
4	4 *	1001610-00	.01 MFD 50V -20+80 Z5U AXIAL	6	C6,C7,C26,C27,C35,C36
5	5	1002180-00	.15 MFD 35V 20% 150D S.TA	1	C1
6	6	1014506-02	180 MFG 50V HZ AL EL	1	C8
7	7	1014506-01	1200 MFG 6.3V HZ AL EL	3	C11,C12,C21
8	8	1005306-00	6.8MFD 35V 10% S.TANT	2	C14,C15
9	9	1009964-00	.68 MFD 35V 10% 150D S.TA	4	C4,C13,C24,C39
10	10	1010031-05	.47 MFD 50V 10% M.POLYCARB	1	C2
11	11	1010274-00	.22 MFD 50V -20+80 Z5U CER	2	C9,C29
12	12	1014506-00	560 MFG 20V HZ AL EL	1	C20
13	13	1010031-02	.10 MFD 50V 10% M.POLYCARB	1	C34
14	14	1010274-02	1 MFD 50V XZ 2C023 CER.	9	C5,C16-C18,C31-C33,C37,C25
15	15	1111205-00	SCREENED VZ= 5.7 2% .40W	1	D9
16	16	1100113-00	D 662 OS 600PCB(STABISTOR)	5	D7,D29,D30,D34,D35
17	17	1100114-00	D 664 QS\75PCB PIV= 25V SP	13	D10,D11,D15,D17,D19,D22-D27,D20,
					CONT D36
18	18	1102808-00	1N 752A VZ= 5.6 5% .40W	1	D6
19	19	1105275-00	D 672 TR= 15NS PIV= 60V SI	4	D1-D3,D8
20	20	1103441-00	1N 756A VZ= 8.2 5% .40W P	1	D14
21	21	1109988-00	1N 964B VZ= 13.0 5% .40W	1	D31
22	22	1112594-00	A115F PIV= 50 I= 3A	2	D12,D28
23	23	1114004-00	UES2601 R PIV= 50 I=30A D05	1	D32
24	24	1110967-00	1N 4005 PIV=600 I= 1A D041 SI	3	D4,D5,D18
25	25	1112588-00	RECT,SILICON PIV=100 I=1	1	D33
26	26	1102421-00	1N 753A VZ= 6.2 5% .40W P	1	D13
27	27	1105652-00	1N 4751 VZ= 30.0 10% 1W Y	1	D16
28	28	1114435-00	1N 5338B VZ= 5.1 5% 5W	1	D21
29	29 *	1209070-00	FUSE, SUB-MINI, 5.000A, 125V, R	1	F2

REVISION HISTORY			BASIC PART NO: 5411776		DRN: L.PETERSON	DATE: 17-FEB-78	D I G I T A L			
ENG	ECO NUMBER	REV	SECTION A OF A							
			SECTION VARIATION INDEX		CHK'D: C.H.	DATE: 17-FEB-78	TITLE PARTS LIST			
P.G	00013	IN	[A] 00				H780 POWER SUPPLY			
R.R	00014	P	[B]							
GC	5411776-ML015	R	[C]		DES.ENG: F.KEANS	DATE: 17-FEB-78				
			[D]				DOCUMENT NUMBER			
			[E]							
			[F]		RESP.ENG.: F.KEANS	DATE: 17-FEB-78				
			[G]				SIZE	CODE	NUMBER	REV
			[H]							
			[I]		MFG.ENG.: R.POWERS	DATE: 17-FEB-78	K	PL	5411776-0-DBP	R
			[J]							
			[K]							
			[L]							
			[M]		ASSEMBLY NUMBER:	TOP DOCUMENT NUMBER:	FILE NAME:		EDIT #	
			[N]				Z1147R.PLS		14	

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SHEET A2 OF A3

D	I	G	I	T	A	L	TITLE		SECTION A OF A	SIZE	CODE	DOCUMENT NUMBER	REV
							H780 POWER SUPPLY			K	PL	5411776-0-DBP	R

LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION 00	REFERENCE DESIGNATOR
76	76		1510705-00	XA 05 NPN 500MW SI 60 50 P	3	Q1,Q4,Q11
77	77		1510706-00	XA 55 PNP 500MW SI 60 50 P	1	Q10
78	78		1510877-00	2N 6028 UJT 300MW R67B	2	Q9,Q16
79	79		1510928-00	C32AX135 SCR@100V I=25A	1	Q15
80	80		1511686-00	DEC5433 FET N 350MW 10 25 1A	2	Q5,Q6
81	81		1510705-01	B 05 NPN 500MW SI 60 50	2	Q8,Q19
82	82		1905575-00	7400 NAND GATE-QUAD 2IN	1	E8
83	83		1910436-00	DEC 74123 ONE SHOT-DUAL,RETRIG	2	E6,E7
84	84		1911219-00	7438 NAND GATE-QUAD 2IN,B	1	E9
85	85		1912108-00	339 VOLT CMPRTR,QUAD	1	E5
86	86		1912536-00	DEC 7805 VOLT REG,FIX +5V	2	E1,E3
87	87		1912048-02	DEC 7812 VOLT REG,FIX +12V	1	E4
88	88		1912792-00	DEC 7915 VOLT REG,FIX -15V	1	E10
89	89		1914156-00	LM 393 VOLT.COMPARATOR DUAL	1	E2
90	90		9006011-01	SCREW,PAN,PHIL, 4-40X 3/8 S	1	
91	91		9006557-00	NUT,KEP , 4-40X 1/4 AF	1	
92	92		9006025-01	SCREW,PAN ,PHIL, 6-32X 5/8	6	
93	93		9008185-00	NUT,KEP , 6-32X1/4 AF	12	
94	94		9006024-01	SCREW,PAN ,PHIL, 6-32X 1/2	6	
95	95		9007032-00	TIE, CABLE, TYPE 101	1	
96	96		1213071-02	INSULATOR,RUBBER SILICONE SM	3	
97	97		9008268-00	COMPOUND, THERMAL JOINT	A/R	
98	98		9009255-00	LABEL, POWER SUPPLY, 2-15/16 " L	1	
99	99		1213071-08	INSULATOR,RUBBER,THERMAL	1	
100	100		9009769-00	WASHER, RECTANGULAR .405X.225X.0	7	
101	101		9006660-00	WASHER, FLAT, .375 O.D. X .187 I	1	
102	102		9008301-01	SCREW,PAN ,PHIL, 4-40X 1/4	2	
103	103	"BLANK"			0	
104	104		9006653-00	WASHER, FLAT, .375 O.D. X .156 I	6	
105	105		9006708-00	WASHER, NYLON, FLAT #8 .375 OD	6	
106	106		9008957-00	*** THIS ITEM IS NOT USED ***	-	
107	107		9007801-00	*** THIS ITEM IS NOT USED ***	-	
108	108		9006042-01	SCREW,PAN ,PHIL, 8-32X 7/8	1	
109	109		9008072-00	WASHER, LOCK, EXTERNAL TOOTH #8	1	
110	110		4901230-00	CEMENT, ACRYLIC RESIN (ETHYL CYA	A/R	
111	111	C-AD-7011583-0-0		BRACKET&CHOKE ASSY.	1	
112	112		9006655-00	WASHER, FLAT, .312 O.D. X .125 I	2	
113	113		1303201-00	3.9 1W 10%	1	R33

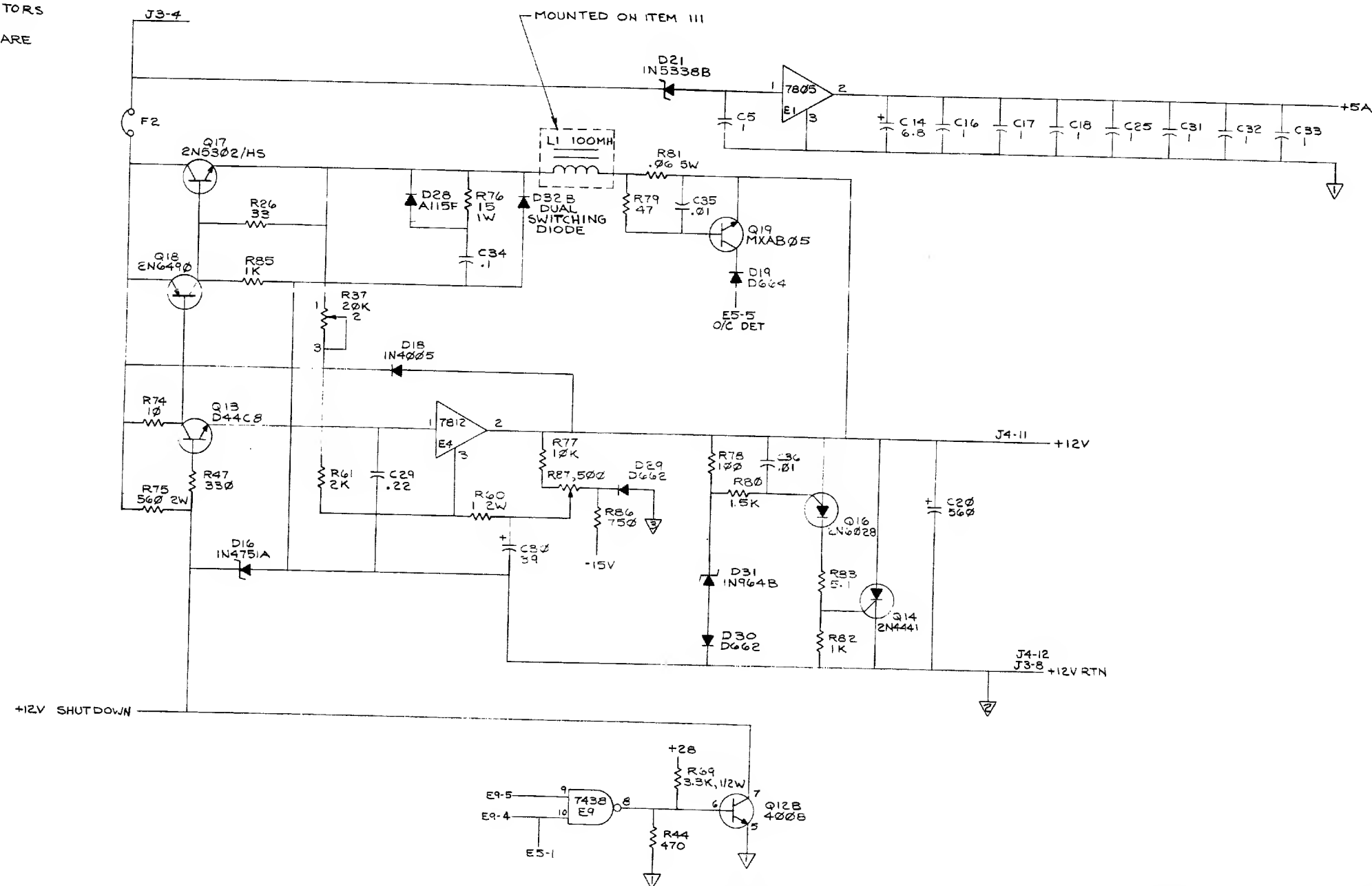
114 NOTE: *ALTERNATE PARTS LIST:
115 NOTE: ITEM 4 (P/N 1001610-00) CAN BE REPLACED BY (P/N 1001610-01)
116 NOTE: ITEM 72 (P/N 1510015-00) CAN BE REPLACED BY (P/N 1511102-00)
117 NOTE: ITEM 29 (P/N 1209070-00) CAN BE REPLACED BY (P/N 1205747-00)
118 NOTE: ITEM 74 (P/N 1512652-00) CAN BE REPLACED BY (P/N 1510708-00)

! D ! I ! G ! I ! T ! A ! L !	! TITLE	! SECTION A OF A	! SIZE ! CODE !	! DOCUMENT NUMBER	! REV !
! ! ! ! ! ! ! !	H780 POWER SUPPLY	! ! ! ! ! ! ! !	! K ! PL !	5411776-0-DBP	! R !
! ! ! ! ! ! ! !	! ! ! ! ! ! ! !	! ! ! ! ! ! ! !	! ! ! ! ! ! ! !	! ! ! ! ! ! ! !	! ! ! ! ! ! ! !

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NOTES:

1. UNLESS OTHERWISE SPECIFIED, ALL RESISTORS ARE 1/4 W, 5% ; ALL CAPACITORS ARE IN μ F.
2. COMPONENTS SHOWN IN DASHED LINES ARE EXTERNAL TO THE P.C. BOARD.

[illegible]

GND AND 5V ARE USUALLY PIN 7 AND 14
RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

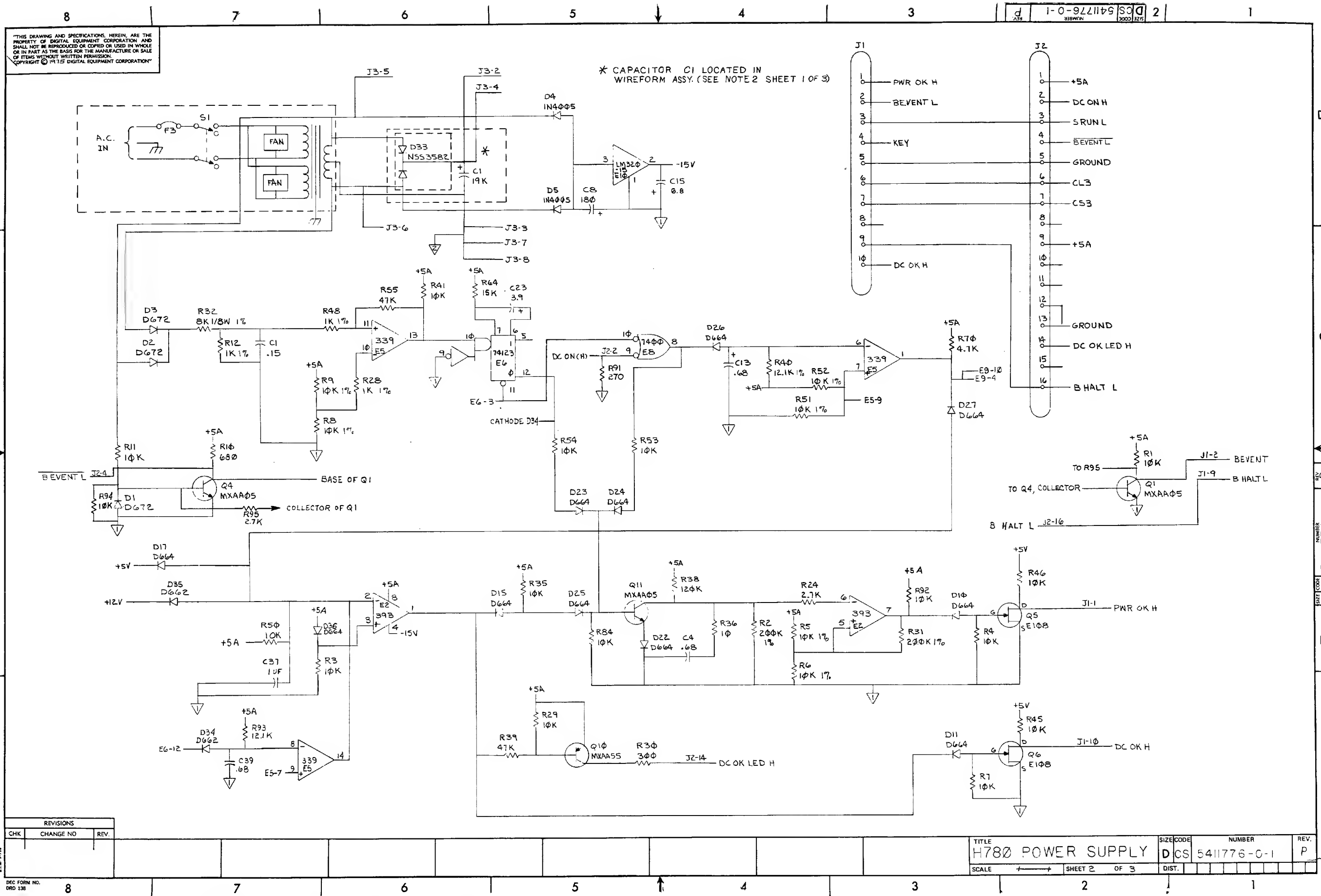
HIGHEST REF. DES.									
C39	D36	E10	Q19	R96	T1	L2			
REF. DES. DELETED									
C3, C19, C28, C35									
R42, R47, R49, R56, R57									

QTY		REF. DESIGNATION		DESCRIPTION				PART NO.		ITEM NO.					
FIRST USED ON OPTION MODEL															
ETCH BOARD REV.		D		PARTS LIST											
				DRN. Basil G. Prince	DATE 7-22-77	<div>digital</div> TITLE H780 POWER SUPPLY									
				CHK'D	DATE 7-22-77										
				ENG. R. J. ...	DATE 7-22-77										
				PROJ. ENG. M. C. ...	DATE 7-22-77										
				PROD. R. J. ...	DATE 7-24-77										
				NEXT HIGHER ASSY											
DEC NO.		EIA NO.		DEC NO.		EIA NO.		D-AD-7011569-0-0							
SEMICONDUCTOR CONVERSION CHART										SIZE DCS		NUMBER 5411776-0-1		REV. P	
SHEET 1 OF 3										DIST.					

digital

7 TITLE H78Ø
2
7 POWER SUPPLY

D-AD-7011569-0-0		SIZE	CODE	NUMBER	REV
SCALE <i>N</i>		D	CS	541776-0-1	P
SHEET	OF 3	DATE			



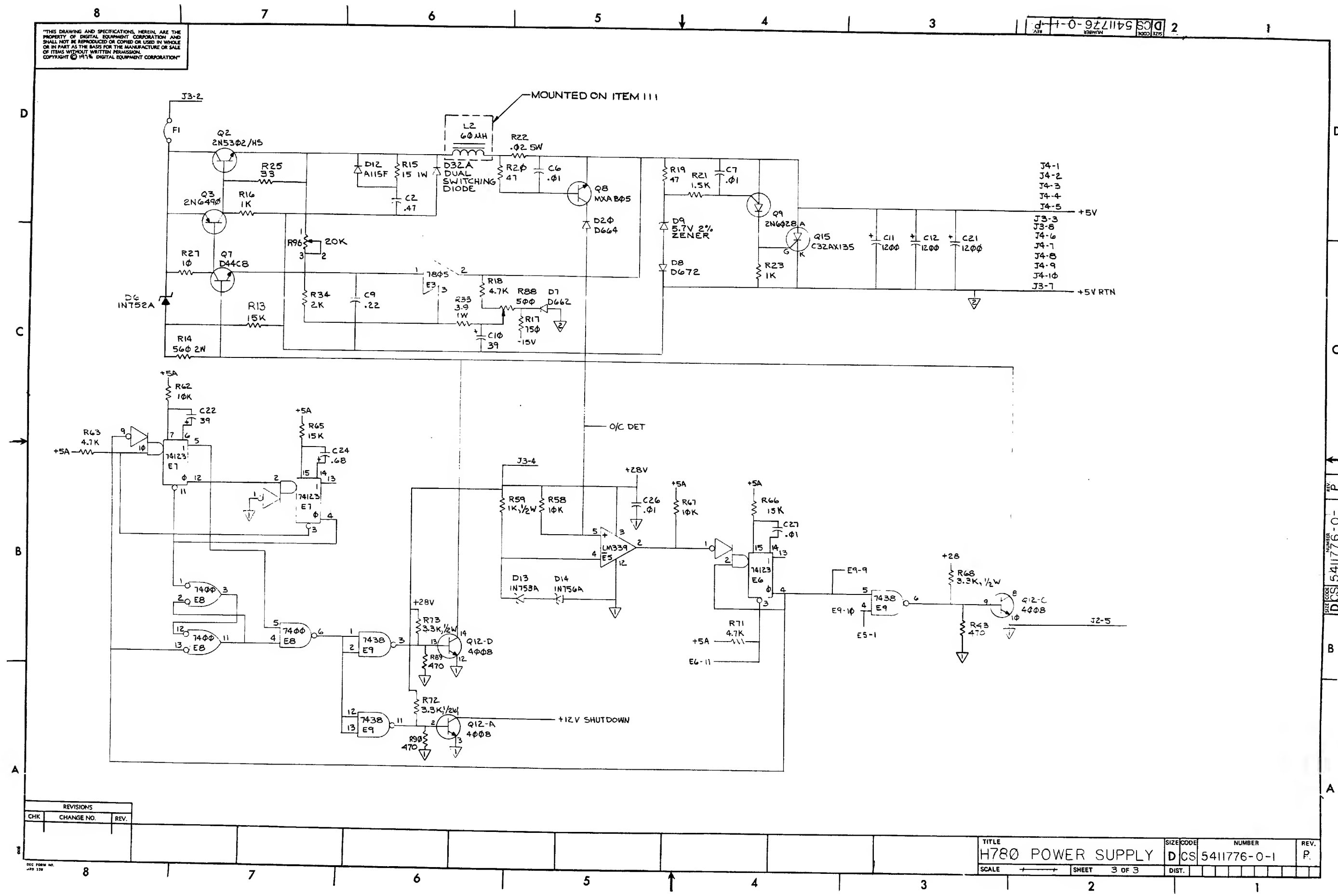
REVISIONS		
CHK	CHANGE NO	REV.

DEC FORM NO. 138
ORD 138

TITLE	SIZE CODE	NUMBER	REV.
H780 POWER SUPPLY	DCS	5411776-0-1	P
SCALE	SHEET 2 OF 3	DIST.	

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CS 5411776-0-1 2



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE
H780 POWER SUPPLY
SCALE
SHEET 3 OF 3
REV. P.

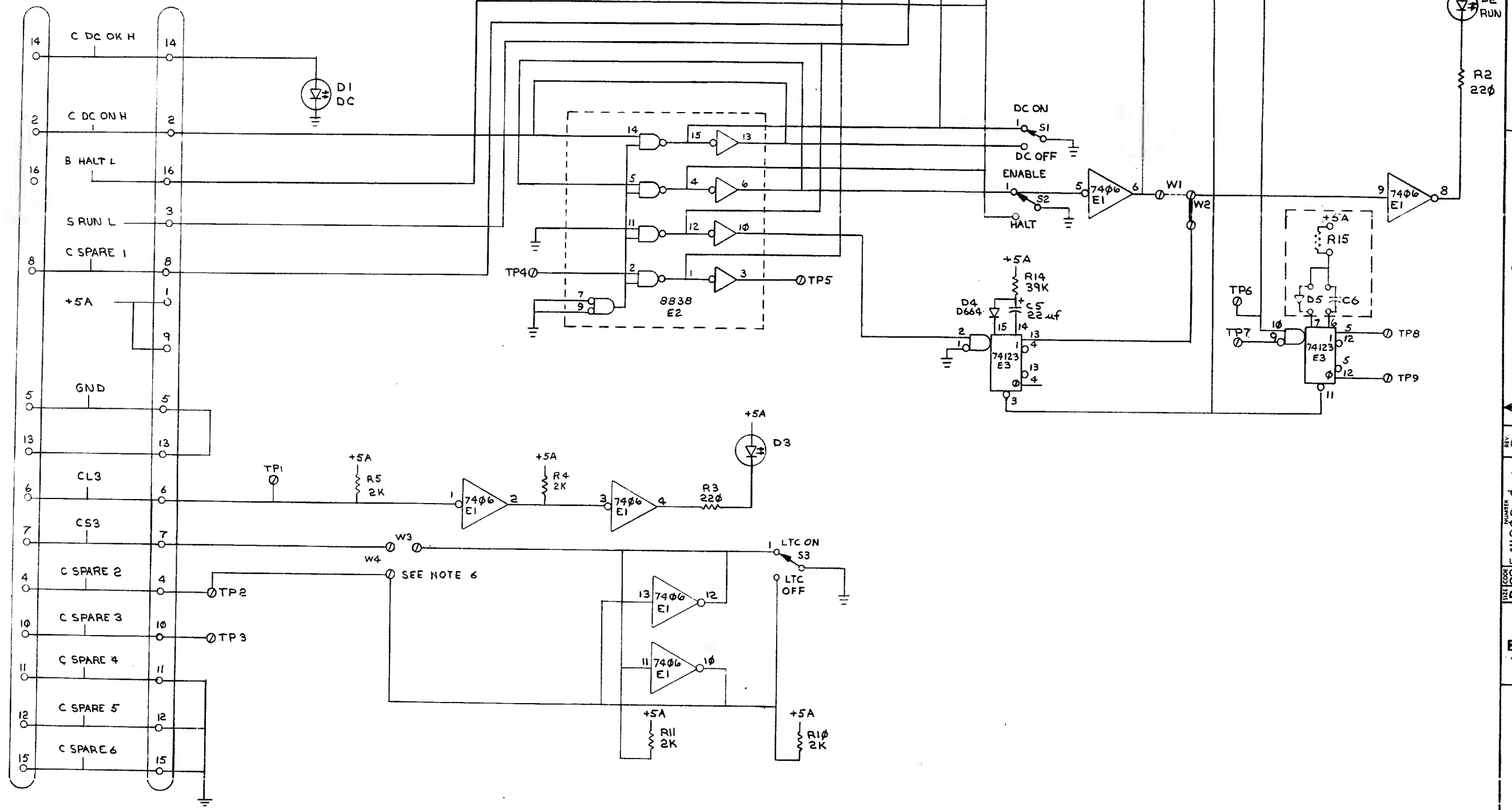
1

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1-2-8081175200 2 1

REMOTE (SEE NOTE 4)
J2

SUPPLY (SEE NOTE 5)
J1

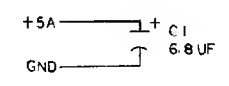
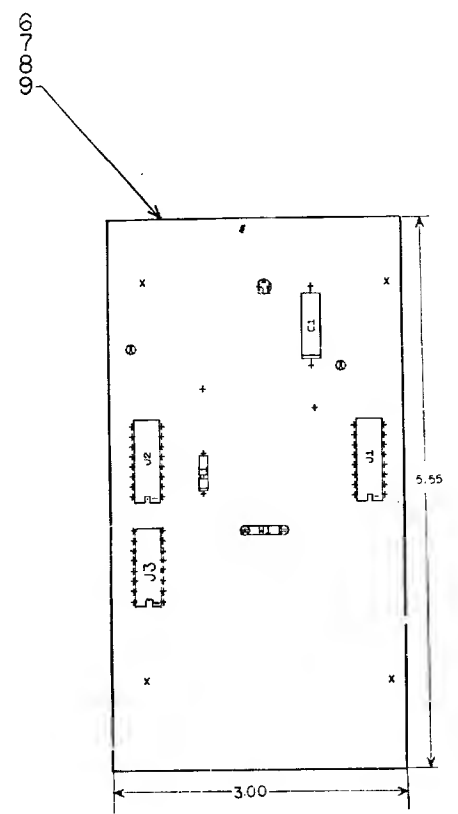
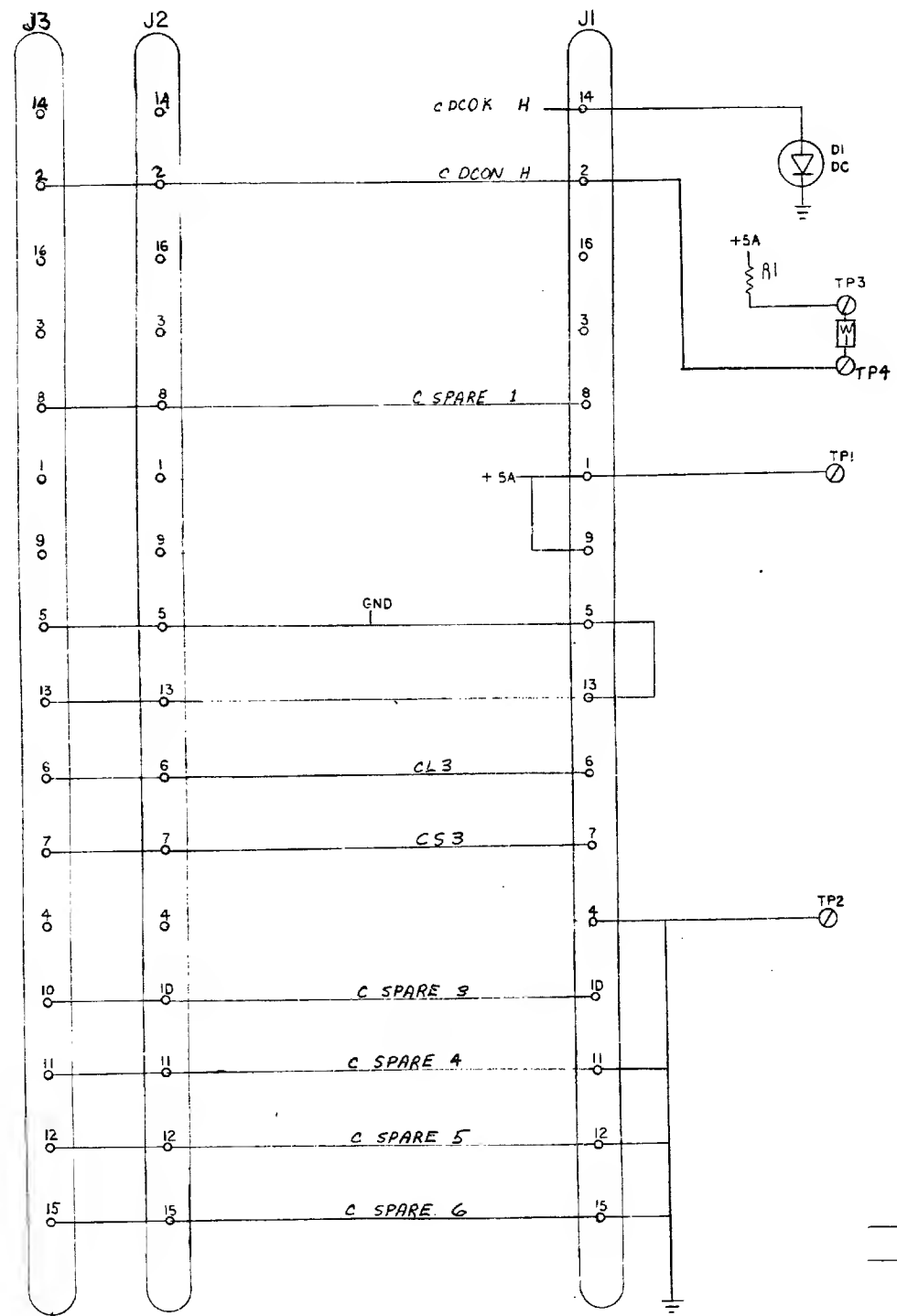


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE LIGHTS & SWITCHES BOARD
SCALE 1:1
SHEET 2 OF 2
REV. D

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NOTES:



IC TYPE	GND	+5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.		
IC PIN LOCATIONS		

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1	W1	JUMPER INSULATED (22 AWG)	90-09185	10
1		ETCHED CIRCUIT BOARD	5012142	9
REF		X-Y COORDINATE HOLE LDC	K-CQ-54121430-4	8
REF		ASSY/DRILL HOLE LAYOUT	D-AH-54121430-5	7
REF		MODULE HISTORY	BMD-54121430-6	6
1	C1	CAP 6.8UF 35V 10%	10-05306	5
1	D1	DIODE LIGHT EMITTING	11-10864	4
3	J1, J2, J3	IC SOCKET	12-11813	3
1	R1	RES 68, 1/4W 5%	13-00219	2
4	TP1, TP2, TP3, TP4	SPLIT LUG	90-06735	

FIRST USED ON OPTION MODEL				PARTS LIST			
ETCH BOARD REV. C							
DRN. L. REYNOLDS				DATE 2-18-76			
CHK'D. F. GAROFALO				DATE 2-20-76			
ENG. J. J. JONES				DATE 4/5/76			
PROJ. ENG. J. J. JONES				DATE 4/5/76			
PROD. J. J. JONES				DATE 4/5/76			
NEXT HIGHER ASSY							
DEC NO.				EIA NO.			
DEC NO.				EIA NO.			
SCALE				SHEET 1 OF 1			
SEMICONDUCTOR CONVERSION CHART				DIST.			

TITLE		SLAVE CONSOLE	
SIZE CODE	NUMBER	REV.	
DCS	5412143-0-1	B	

[illegible]